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OFFICE OF INSPECTOR GENERAL

Semiannual Report to the Congress

Number 11

April 1, 1994—September 30, 1994

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———— Semiannual Report ————
———— to the Congress ————

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April 1, 1994 - September 30, 1994

LETTER TO THE NATIONAL SCIENCE BOARD

This report describes our activities and accomplishments for the first half of FY 1994. Section 5 of the Inspector General Act of 1978, as amended, requires that the National Science Board transmit this report to the Congress within 30 days of its receipt along with any comments the Board may wish to make.

We have reviewed the ways we decide which grantees and programs we audit. In the near future, we will be significantly expanding the scope of our financial reviews of NSF's internal accounts. This expansion of internal financial reviews is due to the passage of amendments to the Chief Financial Officers Act. We continue to examine ways of realigning our audit resources to meet these new statutory requirements.

NSF now has a Chief Operating Officer. The Senate confirmed Anne Petersen, the agency's Deputy Director, in July. We look forward to working closely with her to achieve our common goal of improving NSF's operations.

Linda G. Sundro
Inspector General
October 31, 1994

AND THE CONGRESS

EXECUTIVE

FINANCIAL AUDITS

We audited 22 organizations that received their first NSF awards. These awards support science and engineering education. Of \$4 million in claimed costs, we questioned \$1.5 million. Almost all questioned costs were associated with 8 of the 22 organizations. We identified areas that should be addressed to reduce questioned costs (page 4).

We continued our audits of organizations that receive large NSF awards. At a Federally Funded Research and Development Center, we recommended significant changes in administrative practices concerning indirect costs and internal controls. Audits at four Science and Technology Centers and two Engineering Research Centers gave us confidence in the financial and administrative management of these centers (page 7).

INSPECTIONS AND PROGRAM AUDITS

We identified potential improvements in the economy and efficiency of logistical support for NSF's operations in Antarctica (page 9).

Recommended improvements in the efficiency of some aspects of proposal processing at NSF (page 14).

We inspected three institutions and recommended improvements in program, administrative and financial management (page 35).

INVESTIGATIONS

Investigated two education awards and obtained a felony plea and monetary recovery (page 21).

Investigated fraud by businesses that received awards under the Small Business Innovation Research Program (page 23).

NSF agreed to implement several systemic recommendations to reduce the potential for fraud in the SBIR program. One recommendation, involving the tracking of financial expenditures, remains unresolved (page 24).

MISCONDUCT IN SCIENCE

Concluded there was misconduct in three cases and referred them to the Deputy Director for adjudication (page 28).

SUMMARY

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ACRONYMS

AICPA	American Institute of Certified Public Accountants
ASA	Antarctic Support Associates
BIO	Directorate for Biological Sciences
BFO	Best and Final Offer
CFO	Chief Financial Officer
COI	Conflict of Interest
COTR	Contracting Officer's Technical Representative
CPO	Division of Contracts, Policy, and Oversight
DAEO	Designated Agency Ethics Official
DCAA	Defense Contract Audit Agency
DEB	Division of Environmental Biology
DFM	Division of Financial Management
DGA	Division of Grants and Agreements
ECIE	Executive Council on Integrity and Efficiency
EDP	Electronic Data Processing
ERC	Engineering Research Center
FCTR	Federal Cash Transactions Report
FDP	Federal Demonstration Project
FFRDC	Federally Funded Research and Development Center
FMFIA	Federal Managers' Financial Integrity Act
FOIA	Freedom of Information Act
GAO	General Accounting Office
GPO	Government Printing Office
HHS	Department of Health and Human Services
IPA	Independent Public Accountant
MPS	Division for Mathematical and Physical Sciences
NCAR	National Center for Atmospheric Research
OMB	Office of Management and Budget
PCIE	President's Council on Integrity and Efficiency
PI	Principal Investigator
QCR	Quality Control Review
REU	Research Experiences for Undergraduates
SBA	Small Business Administration
SBIR	Small Business Innovation Research
STC	Science and Technology Center
UCAR	University Corporation for Atmospheric Research
USAP	U.S. Antarctic Program

The table cross-references the reporting requirements prescribed by the Inspector General Act of 1978, as amended, to the specific pages in the report where they are addressed.

REPORTING

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Section 4(a)(2)	Review of Legislation and Regulations	39
Section 5(a)(1)	Significant Problems, Abuses, and Deficiencies	Throughout
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REQUIREMENTS

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The Office of Audit is responsible for auditing grants, contracts, and cooperative agreements funded by NSF's programs and operations and for ensuring that financial, administrative and program aspects of those activities are reviewed. The Office evaluates internal controls, reviews data processing systems, and follows up on the implementation of recommendations included in audit reports. In addition, the Office assists in the financial, internal control, and compliance portions of OIG inspections.

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All audit reports are referred to NSF management for action or information. The Office of Audit advises and assists NSF in resolving audit recommendations. The Office also acts as a liaison between NSF and audit groups from the private sector and other federal agencies by arranging for special reviews, obtaining information, and providing technical advice. The Office of Audit provides speakers and staff assistance at seminars and courses sponsored by NSF and other federal agencies and at related professional and scientific meetings.

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IDENTIFICATION OF POTENTIAL AUDITS

We audit all of NSF's programs and internal operations as well as individual awards NSF makes to its grantees. Since our inception, available resources have been insufficient for us to routinely audit all internal and external programs and operations, so we must decide which programs and awards would most benefit from an audit.

We are frequently asked how we determine which programs we will audit and what criteria we use to make this determination. It is sometimes difficult for us to answer these questions because there are so many criteria involved in scheduling an audit. These criteria include • the amount of money involved in the program or award; • the availability of audit staff members to conduct the audit; • whether there have been any complaints about the program's operation and the source of those complaints; • whether NSF has cognizance for the funded institution; • how recently we conducted an audit, investigation, or inspection of the entity; and • when the entity was last visited by NSF's program staff. We use these criteria to identify those grantees that are "at risk" of not properly accounting for federal funds. "At risk" entities are more likely to be audited either by independent public accountants (IPAs) under contract to OIG or directly by OIG audit staff.

Grantees selected for audit are divided into two groups: those that IPAs are well suited to review and those that our audit staff is better suited to review.

Independent Public Accountants. NSF has contracts with seven IPAs--two of which are among the nation's six largest IPA firms. IPAs compete for these contracts every 5 years and are selected based on an evaluation of their price proposals and qualifications. IPAs review • accounting systems that have indirect cost rate problems; • institutions that are new to NSF or have individual programs that can be readily reviewed; • specific programs where the IPAs have particular expertise; • and programs that, because of their large size, require a significant amount of audit staff members to conduct the review over a short period of time. In FY 1994, IPAs completed, and issued final reports on, 71 audits. The cost of these audits ranged from \$3,579 to \$56,763.

IPA audits begin when we identify a grantee or contractor for audit. We gather information about the award, such as award letters, budget information, project descriptions, and Federal Cash Transaction Reports (FCTRs) from NSF's on-line computer system; Division of Financial Management (DFM); Division of Contracts, Policy, and Oversight (CPO); and program offices. We use this information to prepare the audit scope, which describes the audit work to be performed.

Once the audit scope is complete, we identify the IPA who will conduct the audit and estimate the audit's cost. We provide the IPA with an audit package that includes (1) letters to notify the IPA of the audit assignment and to request price proposals and (2) a letter to notify the grantee/contractor that an IPA will be auditing their organization. The grantee/contractor is sent a notification letter at least 3 weeks before the initial survey visit.

If the IPA decides, from the results of the preaward survey, that an audit is feasible, the IPA schedules a date and time to conduct the on-site review and audit. When the audit is complete, the IPA holds an exit conference with the grantee/contractor and prepares a draft audit report. The grantee is given the opportunity to comment on the report. We review the final report, and then, if it is satisfactory, we forward the report to management for resolution.

OIG Audit Staff. When OIG was established in 1989, the Office of Audit comprised five staff members who reviewed contract auditors' reviews of NSF's contractors and grantees. Because we had few auditors on staff, we had to limit our audits primarily to annual reviews of Federally Funded Research and Development Centers (FFRDCs) as well as special requests for audits by NSF management. We relied heavily on the Defense Contract Audit Agency (DCAA) and IPAs to conduct reviews at most contractors and grantees. At that time, the audit cycle exceeded 13 years.

Audit Cycle

Refers to the number of years between financial reviews.

By FY 1994, the audit cycle was reduced to approximately 6 years. We now have six, two-person audit teams, which comprised an auditor-in-charge and one additional auditor. These teams conduct reviews that involve issues requiring more consultation with managers in the Office of Audit, lawyers, investigators, NSF contract and grant specialists, and NSF program staff members. Depending on the audit scope and the amount of work involved in an audit, auditors may be added to, or removed from, an audit team. However, we try to have at least two persons conducting an audit. We also try to schedule our audits so that site work can be completed in less than 2 weeks.

We begin these audits by selecting an auditee based on the criteria that we used to determine which auditees were "at risk." Once an auditee is identified, the audit team requests the program folder; CPO indirect cost folder; Division of Grants and Agreements (DGA) folder; and DFM files on FCTR and public vouchers, payments, and interest income schedules. The data contained in these files are added to the information developed during the risk assessment. This information is used to define the audit's scope and the resources required to conduct the audit.

Before the audit begins, the auditor-in-charge develops a detailed audit plan that identifies the records and controls that will be tested. These documents serve as the outline for the review; the development of the audit workpapers; and, ultimately, the audit report. Our auditors conduct the audit in accordance with the standards set forth in the General Accounting Office's (GAO) *Government Auditing Standards* (the Yellow Book).

When the audit is complete, the auditor-in-charge discusses the findings with the grantee or contractor at an exit conference. The auditee is then given the opportunity to provide formal, written comments, which are included in the final report. Every final audit report is submitted to NSF management, which is responsible for resolving audit findings.

In addition to these audits, we also review NSF's internal activities. A discussion of these reviews follows.

Internal Audit. This section comprises three auditors and one Electronic Data Processing (EDP) auditor. These staff members review and evaluate the financial, administrative, and program aspects of NSF's activities. They evaluate the effectiveness of existing policies and procedures and provide NSF management with recommendations designed to:

- promote economy, efficiency, and effectiveness in the administration of NSF programs and operations; and
- prevent and detect fraud and abuse in NSF's programs and operations.

Until 1991, we performed mainly discretionary reviews based on weaknesses identified in NSF's administrative, operational, and financial areas. However, since 1991, we have shifted our focus primarily to statutory audits to comply with the:

- Chief Financial Officers (CFO) Act of 1990, and
- Federal Manager's Financial Integrity Act (FMFIA) of 1982.

We conduct these audits in four phases: (1) planning, (2) internal control, (3) testing, and (4) reporting.

AUDITS IDENTIFIED BY THE STRATEGIC PLAN

One important criterion for audit selection has been evolving since 1992. That year, we developed a strategic plan that identified programs within NSF that we would target for increased audit oversight (see Semiannual Report Number 7, page 2).

The three areas identified in the strategic plan were • science and engineering education programs, • large projects (including centers and national research facilities), and • the Antarctic program. Since we focus on reviewing work done and money spent in these areas, awards and programs under one of these three categories have a greater likelihood of being audited.

SCIENCE AND ENGINEERING EDUCATION

This systemic initiative focuses on whole systems that improve education in science, mathematics, and technology in entire states, major urban centers, and rural areas. This is done through broad partnerships that develop goals, solutions, and actions. Funding for the science and engineering education program has increased from \$171 million in FY 1989 to about \$606 million in FY 1995. This increase was due, in part, to the national concern with science, mathematics, engineering, and technical education. As the funding for this program has

increased, more educational activities have begun receiving support.

Many of the entities that now receive science and engineering education awards have not previously received federal support and, as a result, may not be familiar with the federal rules and regulations that govern that support. For this reason, we developed a plan for auditing 29 of those grantees that had not previously received NSF funds (Semiannual Report Number 10, page 3). During this reporting period, we completed reviews of 22 of those grantees. We were pleased to find that 14 of the 22 grantees in this sample had relatively small amounts of questioned costs. However, the other eight grantees had questioned costs ranging from 32 to 95 percent of their claimed costs. Our audits of these 22 grantees questioned an aggregate \$1,542,358 (40 percent) of the \$3,944,768 claimed. This amount indicates that significant difficulties remain.

In response to the most common findings from these reviews, we recommended that institutions:

- develop a better understanding of the requirements of cost sharing and the implications of not meeting cost-sharing commitments;
- establish and maintain accounting systems that meet federal requirements;

- adopt written policies and procedures to inform their principal investigators (PIs) and administrative staff members of award requirements;
- implement internal controls to ensure that grantees comply with the award's requirements;
- develop a systematic way of accumulating and filing support documentation for expenditures, including payroll data and timesheets; and
- fully document subcontract and consultant agreements and the detailed billings related to those agreements.

We intend to continue to give priority to auditing education awards at institutions that:

- do not have previous experience with federal support and therefore may not understand the ramifications of grant periods and allowable cost principles;
- are not part of a larger organization that provides oversight, such as a major university; and
- implement education programs through multiple subcontracts and consultants.

Below are summaries of five audits that we conducted in the education area. In each of these audits, we questioned 50 percent or more of the claimed costs.

Museum Does Not Have Adequate Cost Sharing

NSF awarded a \$650,000 grant to a nonprofit corporation to study forensics. The organization claimed \$650,000, and we questioned \$402,330. We questioned \$84,572 because the corporation incurred and paid subcontract costs more than 90 days before the grant's effective date without NSF's prior written approval. We also questioned \$317,758 in unsupported cost sharing.

In the original grant proposal, the grantee estimated that the project would cost \$1,575,875. The grantee proposed to pay \$975,875 (58.8 percent) of those costs if it received \$650,000 in grant funds. Although the grantee provided a schedule to account for \$227,468 in self-incurred costs, \$192,485 of that amount was not acceptable because • costs were incurred over 90 days before the award's effective date; • costs were incurred in the proposal's preparation and were not allowable; • certain costs (such as meals and public information services) were not necessary for the award's performance; • costs were not documented to support that they were incurred; • and costs claimed and acceptable for cost sharing were not incurred in the same proportion to the total project costs as was proposed.

Science Center Does Not Have Documentation for Claims

NSF awarded two grants totaling \$347,127 to a nonprofit corporation to help reform science education and teaching through a network of science education specialists, teaching workshops, interactive video telecasts, and on-site mentors. The corporation claimed \$347,127, and we questioned \$252,697. We questioned \$96,738 of claimed costs because there was insufficient documentation to support indirect costs, materials and supplies, participant support costs, and travel. We also questioned \$117,261 because there was no documentation for how requirements for matching funds were met.

Communications Company Claims Unsupported and Ineligible Costs

NSF awarded a \$339,921 grant to a for-profit association to develop a radio series. The association claimed \$256,985, and we questioned \$245,454. We questioned approximately \$74,000 of the claimed costs because the grantee did not provide documentation to support the salaries and wages claimed for senior personnel or costs claimed for the purchase of equipment, travel, materials and supplies, and paid to subcontractors. The grantee incurred an additional \$43,000 in claimed costs for advertisement costs, public relations costs, and permanent general purpose equipment. These items are ineligible for reimbursement under federal cost principles. We also questioned \$128,500 of claimed cost sharing because it was not adequately documented.

Firm Claims Ineligible Subcontract Expenses

NSF awarded a \$567,100 grant to a for-profit corporation to create a curriculum that stresses minority role models and achievement. The corporation claimed \$320,688, and we questioned \$161,836. We questioned \$143,020 because the corporation contracted for services that were significantly higher than the lowest bid with no justification, did not have support for the billings under the contract, and issued other contracts over \$10,000 that were not justified or analyzed to ensure that the best price was received. We also found that the proposed 19-percent cost sharing was not being met. Instead, the corporation had contributed to costs at about a 7-percent rate.

Questioned Payments for Consultants by Educational Foundation

NSF awarded \$397,224 to an educational foundation to stimulate interest in mathematics and science among elementary school students. The grantee claimed \$130,869, and we questioned \$72,783 of costs claimed under the grant and \$3,193 of indirect costs claimed in the indirect cost pools because the grantee • did not support the consultants' rate of pay with written agreements and invoices, • incorrectly charged consultant costs to the NSF award instead of a Department of Energy award, • claimed consultant costs twice, • incorrectly charged consultant costs as direct costs rather than as indirect costs, • claimed travel costs that exceeded federal per diem rates, and • improperly charged entertainment costs to the indirect cost pool.

LARGE-SCALE PROJECTS

NSF funds about 300 large projects, at an approximate annual cost of \$900 million. By auditing large-scale projects, we review (1) critical mass centers, which bring researchers together to work toward a common objective, and (2) facilities, which provide access for large numbers of researchers to equipment that is otherwise generally unavailable.

Examples of large-scale projects include: FFRDCs, Engineering Research Centers (ERCs), Science and Technology Centers (STCs), Materials Research Centers, Supercomputer Centers, Alliances for Minority Participation, Minority Research Centers for Excellence, Long-Term Ecological Research Sites, National Astronomy Centers, and Astronomical Observatories.

During this reporting period, we conducted audits at one FFRDC, two ERCs, and four STCs. Our audit of the FFRDC identified \$4.6 million in savings for the government. In contrast, approximately 95 percent of the costs claimed by the ERCs and STCs we audited were well-supported and reasonable. To date, our limited reviews of the STCs and ERCs have contributed to a relatively high level of confidence in the financial and administrative management of most STCs and ERCs. As a result, we plan to focus future audits on large-scale projects

that are not STCs and ERCs, such as other types of centers and national research facilities. We also will continue to audit FFRDCs.

Based on the results of the audits conducted in this area, we developed the following criteria for auditing large-scale projects. We are most likely to audit those large-scale projects that:

- have their own accounting systems, which are separate from the sponsoring university's;
- are not physically located near the sponsoring university, where university administrators have the opportunity to observe the project's daily operations;
- have several major components or missions, each of which is monitored by a different accounting system; and/or
- perform a relatively unique function, when expertise in that function is not represented by staff members employed at the sponsoring university.

Discussions of our audit of an FFRDC and some of the findings we developed as a result of audits conducted at ERCs and STCs follow. The information developed from the audits of ERCs and STCs is combined because the programs and findings are similar.

Audit of an FFRDC Identifies Substantial Cost Savings

FFRDCs are managed and operated by institutions, corporations, or other research entities under agreements with the government. NSF is the primary funding source for, and is responsible for, regularly auditing the following FFRDCs.

- The National Astronomy and Ionosphere Center, managed by Cornell University.
- The National Optical Astronomy Observatories, managed by the Association of Universities for Research in Astronomy.
- The National Radio Astronomy Observatory, managed by Associated Universities, Inc.
- The Critical Technologies Institute, managed by Rand Corporation.
- The National Center for Atmospheric Research (NCAR), managed by the University Corporation for Atmospheric Research (UCAR).

UCAR is a nonprofit organization that comprises 60 institutions located throughout the United States and Canada. Each member institution has a doctoral program in atmospheric or related sciences. UCAR oversees a variety of scientific programs and facilities that serve its member institutions and the academic community. Each institution contributes money to UCAR, but NSF provides most of the organization's financial support through a cooperative agreement with UCAR to operate NCAR. NCAR is a federally funded research and development center.

We reviewed UCAR's indirect cost and facility rates proposal to ensure that UCAR was equitably distributing indirect costs and to establish indirect cost billing rates for FY 1995. UCAR's proposal consisted of six indirect cost rates plus a facility use rate. We tested the FY 1993 costs that supported the claimed indirect costs and determined whether those costs were reasonable, allowable, and adequately distributed among UCAR, NCAR, and other programs managed by UCAR.

We questioned \$800,000 of UCAR's proposed FY 1995 costs because UCAR

- claimed unapproved remodeling costs,
- included building improvements and office furniture in the proposal,
- claimed first- and business-class fares,
- included unreasonable employee benefits and entertainment costs in the proposal,
- claimed unallowable depreciation costs, and
- included unsupported costs in the proposal.

We recommended that NSF disallow the questioned costs when it computes the 1995 rates. These rates were proposed as fixed rates with carry-forward provisions. Under this type of rate structure, adjustments to actual costs are carried forward as an adjustment to the rate computations for the next period. This recovery method will result in a future savings of \$800,000.

We also questioned UCAR's decision to allocate

\$3.8 million in interest payments as indirect costs. These interest payments are associated with bonds issued to pay for building additions and renovations and to purchase Cray supercomputers. Under OMB Circular A-122, interest payments may only be charged as direct, not indirect, costs. If NSF analyzes these charges as direct costs, it will be able to appropriately monitor these charges to determine whether they are reasonable and appropriate. Along with questioning these indirect costs, we recommended that UCAR transfer \$1.5 million from one indirect cost pool to another to more equitably distribute costs among all of UCAR's entities.

We also found the following compliance and internal control matters not directly related to our indirect cost review that we believe required reporting:

- supervisors did not sign time-cards for administrative employees,
- journal entries were not authorized,
- per diem amounts were not decreased for in-room meals charged to hotels,
- recharge rates were not decreased to offset overcharges,
- NSF did not fully use UCAR's internal auditor, and
- general ledger accounts were not clearly defined.

We made recommendations to improve UCAR's compliance with federal requirements and internal control structure.

UCAR generally agreed with our compliance and internal control findings but disagreed with our decision to question

costs. While UCAR believes that all of the costs we questioned were reasonable and necessary, we believe that these costs were either unallowable, unreasonable, or not equitably allocated. Management will resolve these issues during audit resolution.

Engineering Research Centers and Science and Technology Centers

NSF provides significant funding for 18 ERCs and 25 STCs. NSF established the ERC program in 1985 and the STC program in 1987. These Centers are located primarily on college and university campuses nationwide. In FY 1994, NSF provided ERCs and STCs approximately \$110 million, and in FY 1995, the amount of funding is projected to be \$111 million. NSF transfers this money to ERCs and STCs through cooperative agreements with academic institutions. Under these cooperative agreements, NSF offers academic institutions an initial funding commitment of 5 years, with regular reviews that can extend funding to a maximum of 11 years.

We selected ERCs and STCs for audit because they possess a number of risk factors. First, Centers' management structures are often not located near the academic institution that sponsors them. As a result, a good management structure and effective internal and compliance controls at the sponsoring institution may not extend to the Center. Second,

Centers typically receive large awards, usually from \$1 million to \$3 million, annually. Finally, the competitive award criteria for selection as a center stresses cost sharing.

This places heightened pressure on awardees to generate funds for cost sharing from industry and/or state and local governments.

During this reporting period, we conducted reviews and issued reports for two ERCs and four STCs. We questioned approximately \$560,000 because there was no after-the-fact certification of salary and wage costs, costs claimed on FCTRs exceeded actual costs, indirect cost pools contained unallowable expenditures, and claims had been made for general purpose equipment and furnishings that should have been charged through the indirect cost pool.

The following problems associated with cost sharing accounted for approximately \$740,000 in questioned costs.

- Centers' accounting systems inadequately identified and tracked claimed cost sharing amounts.
- Some contributions claimed as cost sharing had been obtained from other federal agencies.
- Claims of cost sharing for salaries and wages were not supported by adequate documentation.

Our audits also assess compliance with federal internal

control and administrative requirements. These findings do not generate questioned costs, but are important indicators of good financial and administrative management.

The most common compliance findings included the following.

- Centers did not comply with rules governing procurements because they were not performing cost and price analyses or systematically avoiding unnecessary purchases.
- Effort reports were not adequately prepared or appropriately reviewed.
- Center managers could not verify work that the Center's employees had claimed they performed on Center projects.
- Equipment had not been properly identified and was sometimes missing. In addition, property records did not reflect the amounts actually paid.
- There were no formal written policies and procedures on the calculation of cash drawdowns and interest.
- The expenditure of federal funds for travel was sometimes inadequately approved and documented.
- Budget changes were inadequately reviewed and approved by scientists having responsibility for the program's performance.

ANTARCTIC PROGRAM

NSF supports Antarctic research and has overall management responsibility for U.S. operations conducted in Antarctica. In previous semi-annual reports, we explained the reasons for selecting the Antarctic program for increased audit oversight, and we discussed financial reviews and audits involving the Antarctic program (see Semi-annual Report Numbers 8, page 3; 9 page 5; and 10, page 9). In this reporting period, we began a performance audit of the program.

The U.S. Antarctic Program (USAP) is a major program over which NSF has comprehensive responsibility for management of operations. In FY 1993, NSF appropriated \$221 million for USAP activities, including a significant allocation to the civilian contractor, Antarctic Support Associates (ASA).

There are a number of issues unique to Antarctica that are especially relevant to our oversight responsibilities for USAP. These issues include the environment, safety and search-and-rescue operations, international requirements, tourism, personnel issues, and logistics. We focused our first performance audit on issues involving logistics.

Logistical support is administered primarily through a contract with ASA and assistance provided by the Navy. NSF's Office of Polar Programs coordinates ASA's and the Navy's efforts and endeavors to maximize efficiency and safety while minimizing duplication of effort. Logistical operations present the greatest potential for us to have a positive effect on the program's scientific objectives. For example, in 1990, NSF spent \$135 million on logistic support and \$17 million on science; in principle, a 1-percent cost savings in logistics could allow an 8-percent increase in the science budget.

In this reporting period, we reviewed elements of ASA's procurement and supply system. We were generally impressed with ASA's operations. We also identified several weaknesses, and we compiled a number of recommendations that we believe will lead to cost savings or increased efficiency.

Significant Potential for Cost Savings or Increased Efficiency

Increased and Streamlined Competition. Although competition in procurements and subcontracts is the best way to ensure minimal cost to ASA and thus to NSF, there is clearly a point of diminishing returns where additional competition would not result in demonstrable cost savings to offset the cost in personnel and other resources. The Federal Acquisition Streamlining Act of 1994 creates a mechanism for federal procurements that adjusts procedural requirements in proportion to the financial significance of the purchase. We believe an analogous approach may be fruitful for ASA. Since relatively few of ASA's procurements account for most of ASA's costs, ASA should compete the costly items where competing each procurement could result in a large amount of cost savings. Accordingly, we recommended that NSF work with ASA to create a competition-in-procurement policy that fosters competition for as many costly items as possible.

Competition of Subcontracts. Our review included three sole-source subcontracts, totaling more than \$4 million, that were awarded to an ASA affiliate. Although ASA's Best and Final Offer stated that ASA would be using its affiliate companies' expertise when necessary, the contract requires that ASA competitively select

subcontractors. We believe that a subcontract to an affiliate requires vigorous efforts to obtain competition and an indepth evaluation of the bids' merits to ensure that the affiliate does not receive preferential treatment. The basis of ASA's subcontract awards to affiliate companies is especially important because between January 1991 and May 1994, ASA awarded 42 subcontracts, totaling over \$6.4 million, to companies affiliated with either of ASA's two parent companies.

Although we have no reason to doubt the quality of the work performed under those subcontracts, we cannot determine whether better, or less expensive, performance could have been obtained because ASA did not obtain competitive bids. Since the affiliates do not charge ASA a fee, they may have a competitive advantage, but they should still be required to provide competitive bids. We recommended that NSF require that ASA undertake and document competition and price or cost analyses for all subcontract awards, including those awarded to affiliate companies, and that NSF thoroughly review the documentation before it approves subcontracts to ASA affiliates.

Expedited Procurements.

Under the Federal Acquisition Regulation, "lack of advance planning" or "concerns related to the amount of funds available" cannot be used as a justification for using a sole-source procurement (buying from a single source without

competition). However, we recognize that the Antarctic program is unique in that there is limited time in the austral summer when equipment and supplies can be conveyed to the ice and when many research activities can be conducted. In addition, the timing of the fiscal year can make it difficult to order items on or after October 1 and receive and transport those items to the ice in time for the short austral summer (usually 4 months long). As a result, competition was occasionally truncated or eliminated altogether. Accordingly, we recommended that NSF and ASA create a fast-track procurement process that ensures that, even in the press to get equipment to the ice in a timely manner, an effort is made to identify alternate sources and obtain competitive bids.

We also identified the following significant issues.

ASA maintains an automated inventory system to monitor which items are available on the ice and which items need to be reordered. The addition of distinct line items to this inventory system was inconsistent. This could result in ASA ordering supplies for which functionally equivalent alternatives are already available. In addition, the inventory system did not track items that had been issued but were expected to be returned to inventory or were otherwise available if needed. ASA had no mechanism to ensure that items were returned to inventory when the user was fin-

ished with them. Accordingly, we recommended that ASA implement an inventory system that identifies and controls all valid line item identifications to ensure the usefulness of the data in the system. We also recommended that (1) ASA develop a mechanism for tracking items that are expected to be returned to inventory at the end of their use and (2) establish and implement procedures for ensuring that the items are returned in a timely manner or reported if destroyed.

Response Pending

NSF and ASA are reviewing our report. We will describe their response to our recommendations in our next semiannual report.

Future Plans

Our review of the Antarctic program is being conducted in several phases. We have completed this phase, which consisted of a performance audit of Antarctic support operations in the continental United States. We will continue to monitor Antarctic operations in the next phase of our review, which will include a review of logistical operations in Antarctica.

OTHER EXTERNAL AUDITS FOR WHICH NSF IS COGNIZANT

In addition to the audits conducted as part of our strategic plan, we conduct audits of all types of NSF awards at institutions where we have "cognizance." Cognizance is the responsibility assigned to a single federal agency for overseeing and performing financial and system audits on behalf of all federal agencies. At almost all of the institutions where NSF has cognizance, NSF provides more funding than any other federal agency. These institutions include small and large organizations employing from 1 to 1,000 individuals and include for-profit, nonprofit, and educational institutions; museums; state and local government units; and hospitals with basic research programs. We conduct audits at institutions for which NSF has cognizance based on requests from NSF management. We also randomly select institutions for audit using the time that has elapsed since the last audit and the number of awards the institution has received as the most important selection criteria.

According to federal standards, it is desirable for an audit to be conducted at every cognizant institution at least once every 3 years. Because of our limited resources, we conduct audits of institutions for which we have cognizance only every 6 years. The National Science Board's Committee on Audit and Oversight has approved incremental increases in our audit resources to reduce our audit cycle. Our goal is to conduct audits at institutions for which we have cognizance every 4 to 5 years.

One type of grantee for which we have cognizance are independent, small businesses that receive funds under the Small Business Innovation Research (SBIR) program. To assist NSF management, we agreed to review financial information supplied by 42 small businesses selected to receive awards under the SBIR program.

Below is a discussion of the results of our reviews of the 42 SBIR grantees.

Preaward Reviews of Potential Grantees Under the SBIR Program

The SBIR program is a federal program that was created to stimulate technological innovation in the private sector, particularly among small firms; increase the commercial application of NSF-supported research; and improve the economic and social benefits of federally funded research. Awards under the SBIR program are funded in three phases. However, federal funds are provided for only the first two phases.

Phase I is a 6-month investigation of the proposed innovative idea to determine the technical feasibility of the proposed idea and the firm's ability to produce significant results. The June 1994 program solicitation estimated that individual Phase I awards would total \$65,000 each.

Phase II is the principal research effort that builds on the work started in Phase I. Only those awardees that successfully complete Phase I are eligible to submit a Phase II proposal. The Phase II awards are expected to be for 24 months and total up to \$300,000.

In Semiannual Report Number 10 (pages 20 and 21), we reported on changes that NSF had made in the SBIR program's administrative

requirements to alleviate some of the administrative burden on grantees in the SBIR program. The first change NSF made was to eliminate some of the detailed recordkeeping and reporting requirements that are necessary under cost-reimbursable awards. The intent of this change was to ultimately make all Phase II awards under this program firm-fixed price. This change requires better planning and more review at the beginning of the proposal and award process, but it eliminates the requirement that the grantee install a financial accounting and reporting system that meets all federal guidelines.

The second change in the administrative requirements is that each grantee must provide a semiannual progress report with its request for additional funding. Progress reports must contain enough detail to assure NSF's program staff members that planned activities were completed during the reporting period. Progress reports must also demonstrate that project objectives have been achieved consistent with planned progress. When a program official accepts the semiannual report, the next increment of grant funding is released.

Once a technical panel determines which proposers are likely to receive funding, the proposers are asked to provide detailed information supporting all line items on the proposal budget and a detailed project milestone chart. The milestone chart contains for each 6-month period:

- the levels of effort in person-months for the PI and the persons identified as key personnel;
- the levels of effort for consultants and/or subcontractors as well as estimated direct costs; and
- an itemized list of costs for permanent equipment and/or major purchases of supplies.

We agreed to conduct pre-award reviews of the Phase II proposals and the justifications for the funding levels provided by the small businesses to determine the adequacy of the planning and the support for the estimates of required funding, the small business' stability, and the likelihood that there are identifiable benchmarks against which progress can be measured.

During this reporting period, we reviewed 42 proposals and justifications for new fixed-price Phase II awards. NSF expects to eventually fund 65 awards during 1994.

We reviewed the detailed submissions and provided comments to the NSF grant and program offices. We found that as the grant and program offices analyzed our questions and comments, they were

more able to identify for the potential grantee the information needed in our reviews. Therefore, we are finding that the more recent packages received from the grantees are more complete and more likely to have appropriate support for salaries and expenses as well as for unusual or large expenditures.

The results of our reviews of the 42 proposal packages are as follows.

- None of the 24 proposals that included consultant services or subcontracts had documentation to show that the organization had used competitive selection processes when it chose the consultants/subcontractors or that the consultants'/subcontractors' service fees were based on their qualifications, the nature of the work, or the service to be provided.
- Several of the consultants' pay rates were estimated at the maximum allowable daily rate without any justification.
- Over half of the proposals did not contain adequate payroll information and salary support.
- About half of the proposals with travel costs did not contain detailed explanations of the destinations, number of days in travel status, amount of

airfare and per diem rates, and purpose of the travel.

- Over half of the proposals with significant expenditures for materials and supplies did not contain an explanation of the types of supplies needed or the source and cost information required.
- From the information provided, in about one-third of the proposals where materials and supplies were requested, it appeared that the items might more appropriately be considered permanent equipment.
- In proposals where publication costs were requested, 70 percent did not contain an explanation of the proposed publication costs.
- Many of the budget summaries reviewed contained some errors in calculations.
- Not all of the milestone charts contained expense projections for all of the expected expenditures.
- In 39 of the 42 proposals reviewed, CPO still had to calculate and approve overhead and general and administrative indirect cost rates for the grantees.

We provided a written statement of our findings on each of the 42 proposals. We also provided CPO/DGA a summary of our findings on all 42 proposals. We recommended that CPO/DGA analyze the findings in our preaward reviews and provide detailed guidance to the SBIR community, CPO, DGA, and program staff members that identifies the specific documentation to be required of grant applicants. CPO/DGA generally agreed with our recommendations.

FIRM-FIXED-PRICE AWARDS

The amount of these awards is decided when the award is signed. After it is signed, the amount of the award will not change regardless of how much or little the grantee spends while conducting work under the award. The award may be terminated or suspended if the grantee cannot demonstrate progress toward semiannual project objectives.

We expect to continue our preaward reviews for the rest of this year's submissions. When we complete these reviews, we will determine how best to continue to evaluate the SBIR program.

Other Audits at Institutions for Which NSF is Cognizant

This report describes reviews that we conducted in the areas of education, large-scale projects, and the SBIR program. Some of these audits were conducted at institutions for which we have cognizance. The following summaries describe the more significant results of audits of other types of awards at seven institutions for which we have cognizance.

QUESTIONED COST

A cost resulting from an alleged violation of law, regulation, or the terms and conditions of the grant, cooperative agreement, or other document governing the expenditure of funds. A cost can also be "questioned" because it is not supported by adequate documentation or because funds have been used for a purpose that appears to be unnecessary.

- NSF awarded two grants totaling \$797,589 to a for-profit organization to develop unmanned aircraft to conduct research on changes in the global climate. The organization claimed \$551,626, and we questioned \$207,482 because the grantee charged \$32,024 for cost overruns (salaries and fringe-benefit costs) from a non-NSF contract; \$86,277 in equipment, consultant, travel, and other direct costs that were not approved in the award budgets; and \$89,181 in indirect costs that were not applicable to the awards.
- NSF awarded a \$250,000 grant to a for-profit organization to conduct database research. The organization claimed \$249,996, and we questioned \$157,137 because the organization did not support \$152,132 of salaries and wages with timesheets or records and it did not provide adequate invoices and expense reports for \$5,005 in travel costs.
- NSF awarded two grants totaling \$883,860 to a private, nonprofit corporation to support a forum that provides opportunities for one-on-one discussion between American and foreign geographers necessary to sharpen the discipline's focus and lead it to new horizons at a time of accelerating change and to increase cross-cultural understandings of how people live and work. The corporation claimed \$855,021, and we questioned \$66,854 because costs included unallowable fundraising charges and expenses that were incurred before the grant's inception.
- NSF awarded two grants totaling \$150,844 to a private business to conduct atmospheric research. The organization claimed \$85,057, and we questioned \$57,818 because the business did not maintain time and attendance records to support salaries and wages, and the business claimed costs that exceeded actual costs.
- NSF awarded a \$250,000 grant to a for-profit organization to assist in the development of an instrument to examine the structural foundation of bridges. The organization claimed \$41,602, and we questioned \$34,646 because the project director's salary, automobile insurance, and travel costs were not entirely related to the grant, and subcontract and consultant services were not sufficiently documented.
- NSF awarded a \$200,000 grant to a nonprofit organization to conduct research on analytical methods for decisionmaking. The organization claimed \$157,017, and we questioned \$29,562 because the organization claimed labor and fringe benefits that exceeded actual costs and charged the grant for consultant costs that were not approved in the award budget.
- NSF awarded two grants totaling \$212,445 to a for-profit organization to conduct biannual conferences for the collaboration of mechanical engineers and others in the manufacturing sector; assess the state of tribological research and technology in the former Soviet Union; and open channels of communication between tribology researchers in the former Soviet Union and the United States. The organization claimed \$165,433, and we questioned \$23,551 because the grantee's records did not support cost sharing, and the grantee used participant support funds to cover cost overruns for materials and supplies without NSF's prior approval.

INTERNAL NSF REVIEWS

We are required to conduct audits of financial management and internal control activities within NSF. In these reviews, we assess the economy and efficiency of management actions and review compliance with internal control principles and various requirements imposed by law, regulation, and Office of Management and Budget (OMB) guidelines.

During this reporting period, we continued our review of, and issued a report on, grant proposal processing times. In preparation for expanded responsibilities under the CFO Act, we initiated reviews of NSF's general ledger, EDP controls in the financial accounting system, and property and inventory control systems. We also prepared a report comparing NSF's costs incurred for printing services to an estimate of the costs for the same services if they were obtained from the Government Printing Office (GPO). Below are summaries of the work conducted in these reviews.

Review of Grant Proposal Processing Time

Grantee institutions and PIs who are selected for NSF awards should receive them as soon as possible. Delays in receiving NSF awards can disrupt the work being conducted under the award. We conducted this review in response to concerns expressed by some PIs that the processing of awards may be unnecessarily delayed after a program officer recommends that a proposal be funded.

In a previous reporting period, (Semiannual Report Number 9, page 10), we reported the results of our initial evaluation of the time required to process grants and agreements in NSF's grants division. DGA's goal is to process each proposal and authorize the award of funds within 30 days after it receives a recommended proposal from a program office. Statistical data indicate that, on average, DGA met this goal in FYs 1989 through 1993, even though the number of awards increased significantly and the number of staff members assigned to process them remained relatively constant.

As a result of findings developed in our initial review, we broadened our scope to analyze proposal processing times within program offices in the period after a program officer recommends a proposal for funding, but before DGA receives the proposal.

We identified several causes for delays, or perceptions about delays, that occurred during this stage of review.

- Program officers, either because of unfamiliarity with the process or through a desire to pass on good news, are occasionally leading potential awardees to believe their awards have been approved when the program officer makes a recommendation, even if neither the program's division director nor DGA has acted. This results in many PIs incorrectly believing that DGA is delaying the award of fully processed and approved proposals.
- After a program officer decides that a proposal should be funded, it is reviewed by that program office's division director. NSF does not have written, agency-wide guidance that establishes the amount of time it should take for a division director to review a program officer's recommendation.

In nearly half of the awards we reviewed, a division director's determination was made more than 10 days after the program officer's recommendation. For more than 20 percent of the awards, the division director took more than 20 days to make a final determination. Additional data indicate considerable differences among NSF's seven program directorates for the time taken for a division director to review a program officer's funding recommendation. We believe that all Assistant Directors should determine whether each division director's time period for action is acceptable.

- Once the division director concurs with the award recommendation, the proposal jacket is usually hand-carried from the program office to DGA. Our review showed that some proposals were taking considerably longer than 2 working days to be forwarded to DGA. In FYs 1992 and 1993, 1,042 and 1,154 proposals, respectively, took longer than 5 days to be entered into DGA's log after the division director concurred with the award recommendation.

To improve NSF's efficiency in processing proposals, we recommended that the Director of DGA:

- Continue to develop consistency among grants specialists in all phases of proposal processing, as well as recognition of any specialized jacket content and processing requirements for proposals from the program divisions they support.
- Annually review differences for proposal processing times among directorates and program divisions to determine whether these differences are attributable to the complexity of the proposals recommended for award by those directorates or whether improvements can be made through changes in DGA staffing patterns.

- Ensure that the appropriate program division is notified whenever a proposal is received more than 5 days after the date the division director recommends that the award be funded so the division can evaluate the situation and take appropriate action to reduce future delays.

We also recommended that all Assistant Directors:

- Emphasize to program officers that at least two more NSF officials (their division director and a DGA grants officer) must approve the recommended proposal before it becomes an award and funds are authorized.
- For each program division, review the average time that elapses between the date of the program officer's recommendation to fund a proposal and the date of the division director's concurrence; determine whether this time period is acceptable; set a time goal for division director review; and take appropriate action to meet the goal.

NSF management generally agreed with all of our recommendations.

CFO Status Report

In Semiannual Report Number 10 (page 12), we reported that Congress and OMB were considering a proposal that requires that most federal agencies prepare financial statements that cover all of the agency's activities. NSF currently prepares financial statements on about \$23 million of its \$3 billion in annual expenditures. At the end of this reporting period, Congress passed a law that requires that 24 agencies prepare financial statements on all of their activities. NSF is one of the agencies covered by this new law. Under this new law, NSF's CFO will be required to prepare the statements on NSF's \$3 billion, and we will be required to audit these statements.

We currently have neither the personnel nor the financial resources to undertake such an audit. However, to prepare for completing the financial statements, we started reviews of selected NSF systems with staff currently available. The systems or parts of systems initially identified for review are those on which we would have to rely substantially to effectively conduct an audit of comprehensive financial statements.

We began reviews of:

- NSF's general ledger, the maintenance and controls, and its adherence to the Department of the Treasury's standard general ledger guidelines.
- NSF's EDP controls in the financial accounting system, the effectiveness of the

controls, and NSF's adherence to the CORE Financial Systems Requirements issued by the Joint Financial Management Improvement Program. (The Program consists of representatives from GAO, OMB, the Office of Personnel Management, and the U.S. Department of the Treasury. This Program's mission is to improve financial management in the government.)

- NSF's management and control of real and personal property. We are initially conducting a survey of computers and data processing equipment to determine whether this highly visible and very portable asset is being adequately inventoried and controlled. NSF has identified this category of assets as one requiring extra precautions and controls. We will use the results of this survey to plan additional property reviews. We believe that if controls over data processing equipment are weak, other areas of property management and control might be vulnerable.

The Government Management Reform Act of 1994 was passed in October 1994. This Act amends the CFO Act and requires that agency-wide financial statements for FY 1996 be compiled and audited by March 1, 1997. At that time, we will be responsible for auditing all of NSF's financial statements, which account for NSF's \$3.2 billion budget. This has never been done in NSF's 44-year history.

Availability of audit resources continues to be a significant factor in our ability to fulfill our statutory obligations and respond to NSF management's priorities. Our ability to provide complete audit coverage and to satisfy all of our responsibilities under the 1990 CFO Act and 1994 Management Reform Act will depend on our ability to develop additional resources. Discussions continue between management and OIG on the best way to compile and audit agency-wide financial statements.

Determining that these systems are reliable, or having changes made to these systems to comply with federal guidelines if problems are found, will help ensure that NSF can prepare reliable agency-wide financial statements. We expect to complete these reviews during the next reporting period.

Printing Costs

NSF relies on commercial firms for all of its printing services. NSF has justified this procurement method based on the • need for control over printing jobs; • need for a quick response to printing requests; • satisfaction with the products received; • timeliness of the contractor's billings; and • ability to have direct discussions with, and immediate feedback from, contractors.

In recent presentations to several Executive Branch agencies, GPO has said that it can provide printing services to agencies at about a 40-percent savings over what the agencies could contract for or provide for themselves. Based on this estimate and the fact that NSF has not requested or used GPO's services in the recent past, we compared costs incurred for printing services for seven NSF publications with an estimate from GPO of the amount it would charge NSF to produce the same product. We also reviewed the costs of mailing these publications. NSF uses commercial firms to label and mail some publications. We used the commercial firm costs to compare the quoted costs of mailing by GPO.

In four of the seven publications we reviewed, GPO estimated it could produce a less expensive product. In two instances, the GPO estimates were higher than what NSF paid for the printing job. In one instance, GPO said it could not print the publication under its current guidelines.

Of the five NSF publications that commercial firms mailed, GPO could have mailed three at a lower cost. In the other two cases, GPO's costs were more than NSF's costs.

Although the savings on printing services were not as great as initially estimated, we believe that if printing services are actually comparable and GPO's estimated costs are close to its actual costs, selected use of GPO is desirable. We believe that there are advantages, in addition to the cost differences, that should be considered.

For example, GPO will produce, at its own expense, additional copies of a publication that it believes has appeal to the general public. GPO will then broadly disseminate the publication, which would help NSF further its goals of educating the general public and promoting interest about science and engineering.

We recommended that NSF use GPO, on a trial basis, for a portion of its printing work. In this trial period, NSF will be able to determine whether real cost savings are available and performance by GPO and its contractors is effective. NSF management generally agreed with our recommendations.

NSF agreed to analyze these issues to determine whether GPO can provide the best service at the lowest cost. If so, NSF will procure some printing services from GPO.

PEER AND QUALITY CONTROL REVIEWS

In addition to conducting audits, the Office of Audit participates in Executive Council on Integrity and Efficiency (ECIE) projects and is responsible for conducting quality control reviews (QCRs) of public accountants under contract with OIG.

The Inspector General Act of 1978, as amended, requires that operations of the offices of audit in OIGs be peer reviewed exclusively by a federal audit entity. In addition, the Act requires that OIGs ensure that work performed by nonfederal auditors also complies with the standards established by GAO's *Yellow Book*. Accordingly, during this reporting period, we completed QCRs on four IPA firms and a peer review of an ECIE OIG. The results of these reviews are discussed below.

QCRs Conducted on Four IPA Firms

In 1990, NSF issued contracts to seven IPA firms to assist us in meeting our audit cycle for conducting financial and compliance audits on NSF grantees and contractors. We conduct desk reviews of audit reports issued by these IPAs to determine whether the reports meet *Yellow Book* standards and our reporting requirements. While these desk reviews are effective, they neither assess the quality of the audit work performed nor determine whether the IPAs are meeting the *Yellow Book*'s other requirements. Accordingly, we completed QCRs on firms in Ohio; New York; Virginia; and Washington, D.C.

The QCRs focused on internal policies and procedures at these firms to ensure quality audits were conducted, as required by the *Yellow Book*. We also determined whether these IPAs were the subject of an external peer review every 3 years, as required by the American Institute of Certified Public Accountants (AICPA) and the *Yellow Book*. Additionally, we conducted an in-depth review of working papers to determine whether • adequate tests were performed to render an opinion on financial transactions, internal controls, and compliance issues; • they were prepared as required by *Yellow Book* standards; and • they supported statements and findings in the audit reports. We also examined the continuing professional education and training of public accountants to determine whether it was in compliance with the *Yellow Book*.

Overall, we found that the IPAs had internal policies and procedures to ensure that audits were conducted, as required by the *Yellow Book*; evidence that external peer reviews were conducted or planned to be conducted on their operations to meet AICPA and *Yellow Book* requirements; working papers showed that sufficient work was performed to support findings; and records showed continuing professional education for staff members assigned to federal audits was either completed or scheduled to be completed to meet *Yellow Book* standards. However, most IPAs

had problems indexing or referencing statements in reports and procedures in audit programs to support working papers. Also, IPAs did not always indicate the purpose, source, scope, or conclusion on working papers, particularly regarding internal controls. There were a few instances where the IPAs did not present information in audit reports, as required in NSF's Audit Guide issued to them or oral instructions given to them by OIG personnel. We recommended that the IPAs take corrective actions to improve these cited conditions, and all IPAs agreed to comply with our recommendations.

Peer Review of Another OIG

In Semiannual Report Number 10 (page 16), we reported that we had contacted another agency's OIG, held initial discussions on review procedures, and issued the OIG an ECIE-approved questionnaire to complete. During this reporting period, we completed the on-site review of the OIG and issued our report. Our review was conducted under the requirements of the Inspector General Act, as amended, using the ECIE guides that describe how to determine whether internal quality controls are established to ensure that audit standards, policies, and procedures are being followed. We conducted an in-depth review of their reports, working papers, and written internal audit policies and procedures. We also examined their staffing qualifications, continuing professional education performance, and other office activities.

Our review confirmed that (1) staff members possessed the knowledge and skills for the audits assigned and were attaining their continuing professional education requirements; (2) audits were adequately planned, staffed, supervised, and conducted as required by the *Yellow Book*; and (3) the audit reports and audit working papers were prepared as required by the *Yellow Book*.

I N V E S T I G A T I O N S

The Investigations section is responsible for investigating violations of criminal statutes or regulations involving NSF employees, grantees, contractors, and other individuals conducting business with NSF. The results of these investigations are referred to federal, state, or local authorities for criminal or civil prosecution or to NSF's Office of the Director to initiate administrative sanctions or penalties.

EMBEZZLEMENT OR DIVERSION OF NSF GRANT FUNDS

We place a high priority on allegations involving embezzlement, diversion of grant or contract funds for personal use, or other illegal use of NSF funds. Deliberate diversion of NSF funds from their intended purpose is a criminal act that can be prosecuted under several statutes. We encourage universities and other grantees to notify NSF of any significant problems relating to the misuse of NSF funds. Early notification of significant problems increases our ability to investigate allegations and take corrective action to protect NSF and its grantees.

The following section describes cases involving the diversion of funds that we investigated during this reporting period.

INVESTIGATIONS OF SCIENCE EDUCATION GRANTS

We conducted several investigations involving allegations of misuse of funds from science education grants. Over the last 5 years, NSF has increased the funding it provides to grantees for science and engineering education. With this increase in funding, we have received an increased number of allegations of abuse involving science education grants. For this reason, we have increased our audits in the education area (see page 4 of this report). Descriptions of two investigations in which we found substantial evidence of diversion of education grant funds and one case in which we found no evidence of intentional wrongdoing follow.

Table 1: Investigative Case Activity

Active Cases From Prior Reporting Period	27
New Allegations	23
Total Cases	50
Cases Closed After Preliminary Assessment	5
Cases Closed After Inquiry/Investigation	19
Total Cases Closed	24
Active Cases	26

Funds Embezzled From Science Education Grants

In February 1994, we were informed by a western research foundation that an independent audit had discovered that a PI had improperly spent NSF and Department of Education funds from science education-related grants. The grants supported an after-school mathematics program to tutor inner city elementary school-children. NSF and the Department of Education provided stipends for teachers and university students to participate in the after-school program. University students were encouraged to participate in the program to provide role models for the schoolchildren. Our investigation, which was assisted by the research foundation and an independent auditor, revealed that from 1989 to 1993, the PI improperly issued approximately \$87,000 in grant stipends.

Of this \$87,000, over \$15,000 was issued to university students, who were told by the PI that the checks had been issued in error. The students then endorsed the checks back to the PI, who deposited the funds into his personal account. We also found evidence that the PI forged the payees' signatures on stipend checks worth nearly \$4,000. The PI cashed these checks and deposited the funds into his personal account. We also found that an additional \$8,000 in stipend checks were issued to students, who refunded them to the PI by

cash or personal check. The PI then deposited the money into his personal account. Overall, we found that the PI had fraudulently diverted over \$27,000 in grant funds to his personal financial account.

In addition to the funds diverted for personal gain, we found more than \$50,000 in stipend checks issued by the PI that were not authorized under the grants or by the research foundation. We found that the PI issued stipends totaling (1) \$2,000 to staff members as Christmas bonuses; (2) over \$7,000 to an individual for work on a textbook the PI was writing; (3) \$16,000 in payments to students for work that may or may not have been related to the grants; and (4) \$25,500 for financial assistance to help needy students purchase books or pay tuition. We found that, in response to students' requests for assistance, the PI distributed financial aid in the form of the improperly issued stipend checks.

The PI was able to do this by subverting ordinary university business procedures. The PI obtained sole signature authority to issue stipend checks under the grants then appended additional names onto legitimate stipend voucher sheets, falsely stating that the persons listed had participated in the education program supported by the grants. After authorizing that the checks be issued, the PI would then pick up the checks from the research foundation offices, thus concealing the fraudulent and

improperly issued stipend checks.

When confronted with this evidence, the PI provided a sworn statement to us admitting that he improperly issued stipend checks and then deposited \$27,000 in grant funds into his personal account. The PI resigned from his positions at the research foundation and the university and reimbursed the foundation \$87,361 for the fraudulent and improper expenditures. We referred our findings to the appropriate U.S. Attorney. The PI agreed to plead guilty to violating 18 U.S.C. § 666, *Theft or Bribery Concerning Programs Receiving Federal Funds*. Sentencing by the U.S. District Court is pending. NSF and the research foundation are discussing the adjustment of other questionable expenditures by the PI. Although the PI's actions were egregious, the research foundation and the university responded quickly and aggressively to notify us of the diversion of funds and to provide important and effective assistance in our investigation.

Investigation of Conflict of Interest and Fraud in Science Education Reform Grant Funds

In 1990, NSF awarded a continuing grant to an education association to support a national reform of secondary school science programs. This program was also supported by a Department of Education grant.

Shortly after signing approval on an NSF grant for this project, an NSF Division Director accepted a position with the association as the Director of Research and Development on the project. We found that the former NSF Division Director had several meetings with NSF staff members to discuss budgets for supplemental funding and grant amendments that the former Division Director had originally approved. Meetings and discussions of this kind are prohibited by 18 U.S.C. § 207, *Restrictions on Former Employees on Representation on Particular Matters*.

As Director of Research and Development for the association's education reform project, the former NSF Division Director was responsible for public relations and disseminating developed materials, which required routine travel to give speeches about the project. Through review of travel expenditures charged to the NSF and Department of Education grants, we discovered that between January 1991 and May 1993,

the individual embezzled at least \$30,000 in grant funds.

The individual charged the NSF and Department of Education grants for travel expenses. Although some of this travel was related to the education association's reform project, we found that other travel was related to the individual's personal business. In addition to charging the federal grants for these travel expenses, the individual requested and received travel reimbursements from the institutions and organizations visited. He then deposited the travel reimbursements into his personal account instead of returning them to the grants. The individual also submitted payroll vouchers falsely charging hours to the grants when the individual was conducting personal business and charging personal items to the grants. These acts are prohibited by 18 U.S.C. § 666, *Theft or Bribery Concerning Programs Receiving Federal Funds*.

As a result of our investigation, the association requested that the individual repay all funds expended for personal items. However, the individual resigned from the association without repaying the funds and has refused to cooperate with our investigation. We referred our findings to the appropriate U.S. Attorney, who is reviewing the matter for possible criminal and civil proceedings.

Investigation of Cost Mischarging Found No Evidence of Fraud

The Federal Bureau of Investigation received an anonymous allegation that a small business had been mischarging salaries under an NSF grant to develop science education materials for middle school students. It was also alleged that company records were falsified before an NSF audit to conceal the mischarging. Our initial review found that an audit of the small business grantee questioned over two-thirds of the expenditures under the company's grant because there was no documentation to support the expenditures. A joint Federal Bureau of Investigation and OIG investigation found no evidence of fraud or deliberate misuse of funds. However, the investigation did support the audit findings.

...the small business owner had repeatedly submitted duplicate proposals to different federal agencies, falsely stating in each that the proposed research was not submitted or funded elsewhere. In one case, the business received funding for the same research from several agencies, then submitted the same final report to each of the agencies.

Investigation of Fraud by a Small Business

We received an allegation that a small business had submitted a grant proposal to NSF that contained a forged signature. While reviewing the small business' funding history, we found that the small business had been active in the SBIR program and had received several awards from other federal agencies. Because the titles of many of the awards were similar, we requested copies of other agencies' proposals and final reports and found that several proposals and final reports were virtually identical. We also found that the small business owner had falsely certified in proposals and contract documents that similar proposals had not been submitted or funded by other federal agencies.

We found evidence that the small business owner had repeatedly submitted duplicate proposals to different federal agencies, falsely stating in each that the proposed research was not submitted or funded elsewhere. In one case, the business received funding for the same research from several agencies, then submitted the same final report to each of the agencies.

The SBIR program requires that PIs be primarily employed

by the SBIR grantee while the research is being conducted, which excludes full-time employment elsewhere. We found that the small business owner repeatedly and falsely stated that the PI on an award was employed by the business, when, in fact, the PI was employed full time at a federal laboratory throughout the period of the award.

Our investigation also revealed that, despite the small business owner's certification to the agencies that most of the work would be conducted at the small business, the owner arranged for all of the research under several awards to be performed by a university laboratory, which violated SBIR program requirements. The small business owner obtained several awards by falsely stating that the research would be primarily conducted at the small business.

Overall, we determined that the small business owner submitted over 30 false certifications and false statements, acts prohibited by 18 U.S.C. §1001, *False Statements*, to improperly obtain over \$1 million in SBIR awards. We referred our findings to the appropriate U.S. Attorney, who is reviewing the matter for possible civil and criminal proceedings.

Small Business Fully Disclosed Funding Sources in SBIR Proposals

In November 1993, we conducted a financial and compliance audit of a small business that received funding from NSF under the SBIR program. After the audit found that the small business had improperly charged an NSF grant for similar work being performed under an SBIR award from another agency, our Office of Audit requested that the Investigations section conduct a review because many of the firm's SBIR awards seemed similar in nature. We reviewed 13 proposals that the small business had submitted to 3 federal agencies. We found that the proposals, while similar, were not duplicative. For the most part, the proposals were complementary proposals that built upon previous research. Only two proposals were extremely similar, and we found that for those proposals, the small business followed SBIR regulations by listing the previous contract under the "pending support" section of the second proposal and including a project summary of that previous contract. Since the small business fully disclosed its funding sources and funding history, we determined no wrongdoing on the part of the small business. The improper charges to the NSF grant are being resolved through the audit process.

Recommendations for Systemic Reform in the SBIR Program

Vice President Gore's National Performance Review recommended that Inspectors General use the results of investigations to "help improve systems to prevent waste, fraud and abuse, and ensure efficient, effective service." Consistent with that advice, we analyzed systemic issues that arose as a result of our ongoing investigations involving the SBIR program. The most significant problems that we encountered while reviewing grantees under the SBIR program were the concealment of duplicative proposals submitted to various agencies and the acceptance of duplicate funding for the same or overlapping research. As described in Semiannual Report Number 10 (page 21), we made a number of systemic recommendations designed to reduce the potential for this kind of fraud and abuse. In this reporting period, NSF agreed to:

- clarify and emphasize the prohibition against the receipt of duplicate proposals for "overlapping work";
- define "overlapping work" as "any steps in the performance of one proposal which would not need to be repeated to perform the work on the second proposal";
- require that proposers certify clearly, and under penalty of perjury, that the proposal is not duplicative, or fully disclose duplicative proposals and awards in proposals;

- require that companies certify, at the time of the award, and with each progress and final report, that no duplicate funding has been received, and that all duplicate proposals have been withdrawn from other agencies; and
- determine whether the establishment and continuation of companies whose sole source of income is from the SBIR program is consistent with the program's objectives.

Table 2

New Referrals	5
Referrals From Previous Reporting Period	2
Prosecutorial Declinations	1
Criminal Convictions/Pleas	1
Civil Action Initiated	2
Civil Complaints From Previous Reporting Period	1
Civil Judgments/Settlements	1
Administrative Actions	3
Investigative Recoveries*	\$107,361

*Investigative Recoveries comprise civil and criminal judgments, fines, and restitutions as well as specific cost savings for the government.

Recommendation to Track Financial Expenditures Unresolved

NSF decided to issue Phase II awards to SBIR companies as "fixed-price" grants. Payments under Phase II awards will be contingent on technical reports that describe scientific progress. One of our recommendations, resulting from our identification of financial improprieties, was that the Phase II progress reports also include specific information on financial expenditures.

NSF's Deputy Director convened several meetings with us about this issue. The Deputy Director reports that NSF is working actively toward resolving our recommendation. However, as of the date of this semiannual report, NSF has not decided whether, or how to, monitor these financial expenditures. NSF's Deputy Director expects to resolve these issues shortly. We will describe management's decision, along with our evaluation of that decision, in our next semiannual report.

Preaward Reviews Conducted to Improve Management Controls in the SBIR Program

The National Performance Review also recommended that Inspectors General use the results of investigations to "help managers evaluate their management control systems." Based on the National Performance Review, the President's Council on Integrity and Efficiency (PCIE) urged all Inspectors General to "examine the underlying causes of fraud ... and recommend ways that program vulnerabilities can be reduced." As part of this effort, our Office of Audit conducted preaward reviews of likely grantees under the SBIR program. For details of these reviews, see page 11 of this report.

Procurement Integrity Act Violation

In May 1994, we were asked to determine whether there had been a violation of the Procurement Integrity Act regarding the competition for an NSF contract. The Act prohibits the disclosure of source selection information, except to authorized individuals, during a federal competitive procurement. Whoever violates the Act is subject to possible criminal, civil, and administrative action.

During the investigation, a senior NSF official admitted that, during a telephone conversation between himself and the contract bidder regarding other NSF business, he released source selection information to the contract bidder. Although we concluded that the NSF official violated the Act by disclosing this information, we found no evidence that the NSF official gained financially by doing so. We referred our findings to the appropriate U.S. Attorney. The U.S. Attorney and the NSF official agreed to a civil settlement to resolve this matter. The U.S. Attorney declined criminal prosecution.

OTHER INVESTIGATIVE MATTERS

Theft of Computer Equipment From an NSF-Funded Research Center

In July 1994, we were informed that approximately \$57,000 of computer and other equipment was stolen from an NSF-funded research center. The thefts occurred because established security procedures, such as the use of coded key cards for access, were not followed. Local law enforcement officials, in coordination with OIG, are investigating this matter. The research center's insurance company will replace the computer equipment.

Thefts From "Science Fare"

In May 1994, we were notified that there had been numerous thefts from NSF's cafeteria, "Science Fare." Our review found no apparent suspects. However, we did find that there were several vulnerable entrances, and there was no key security. In coordination with the Division of Administrative Services, front and rear entrance locks were changed, and a doorbell was installed at the rear entrance for deliveries. Since the additional security measures were taken, the thefts have ceased.

The Office of Oversight focuses on the science-engineering-education-related aspects of NSF operations and programs. It oversees the operations and technical management of approximately 200 NSF programs that received about 55,000 proposals in FY 1994.

The Office conducts and supervises compliance, operations, and performance audits as well as investigations of NSF's programs and operations; undertakes inspections and evaluations; and performs special studies. It also handles all allegations of nonfinancial misconduct in science, engineering, and education and is continuing studies on specific issues related to misconduct in science.

O V E R S I G H T

MISCONDUCT IN SCIENCE AND ENGINEERING

NSF's DEFINITION of MISCONDUCT in SCIENCE and ENGINEERING

Fabrication, falsification, plagiarism, or other serious deviation from accepted practices in proposing, carrying out, or reporting results from activities funded by NSF; or retaliation of any kind against a person who reported or provided information about suspected or alleged misconduct and who has not acted in bad faith.

SIGNIFICANT MISCONDUCT CASES

Plagiarism in a Proposal Submitted to NSF

We were informed that a proposal submitted to NSF contained material that was copied without offset or attribution from a Ph.D. dissertation written by a student at another institution. We compared selected pages from the dissertation and the proposal and found that text in the proposal's introduction and background was substantially similar or identical to text in the dissertation. In response to our request for information about the allegation of plagiarism, the subject admitted that he had copied the material from the dissertation. The subject said he might have copied the information because he was familiar with the field and had used similar language in his own publications. He said he could not think of a more concise way of expressing the information. He noted that he referenced publications by the dissertation's author and had changed selected phrases within the copied material to indicate that he had not performed the described work.

We referred this allegation to the institution for investigation. The institution determined that the subject had committed misconduct in science when he plagiarized material from the dissertation in his NSF proposal.

However, the institution said it could not impose additional sanctions because the subject had left the institution.

Instead it placed the investigation report in his personnel file.

We determined the institution had only assessed the copied material that we had identified. It had neither compared the two documents for further instances of plagiarism nor reviewed the subject's other proposal. We began our own investigation. We learned that the subject had not had the dissertation's author's permission to copy the text into his proposal. We determined that the copied material was not present in another NSF proposal that named the subject as a co-PI and that no further material from the dissertation or other writings by the author appeared in the subject's proposal. We concluded that a preponderance of the evidence showed the subject had committed plagiarism when he copied material from the dissertation without offset or attribution and that his stated reason for incorporating the material into his proposal showed that he had acted with gross negligence.

We forwarded our report to NSF's Deputy Director with a recommendation that she find that the subject had committed misconduct in science and take appropriate actions concerning the subject. We recommended that for 3 years, any proposals the subject submits or on which he is named as a co-PI be accompanied by a certification to our office from the subject that they contain no plagiarism. We also recommended that the subject be responsible for obtaining his department chairperson's or equivalent's assurance that, to the best of their knowledge, the submission does not contain plagiarized material. We believe this case emphasizes the importance of carefully citing and offsetting work copied from a source document irrespective of that document's nature. Information in a dissertation is particularly sensitive because the dissertation may be made available to others before the author has had an opportunity to publish the results.

Violation of Confidential Peer Review

We were informed that a foreign scientist had submitted a proposal to a foundation in his country that contained text, figures, and formulae copied from an NSF proposal the subject had received for peer review. We could not defer investigation of the allegations to the subject's institution because the subject worked at a foreign institution, which could not reasonably be asked to conduct an investigation

that conformed to the requirements of NSF's misconduct in science regulation.

NSF instructs its reviewers not to "copy, quote, or otherwise use material from" a proposal received for peer review. We found that the subject had reviewed the NSF proposal and that his proposal contained a large amount of material that was substantially similar or identical to material in the NSF proposal. The subject had rearranged the presentation of the material in the NSF proposal to suit better the flow of material in his own proposal.

We asked the subject about the allegations of plagiarism and the violation of the confidentiality of peer review. The subject told us that the copied material contained general knowledge in the field and that the ideas in his proposal were not derived from the NSF proposal. He stated that his proposal could stand on its own merits without the copied text. He failed to fully address the significance and extent of the copying. We explained that the content of the copied material was not at issue; rather, the plagiarism allegation centered on his failure to offset the material and provide a citation to the source document.

The subject explained that he viewed proposals as secret documents that were not held to the same rigorous standard of attribution as published works. He said that he had copied other material into his

proposal from source documents, including a paper by the PI of the NSF proposal, and had not cited the source documents. Despite our repeated requests, he failed to support his claim that the material he had copied was in common use by providing documents by authors other than the NSF PI that contained the same material.

We concluded that a preponderance of the evidence showed that the subject had knowingly violated the confidentiality of peer review when he copied material from an NSF proposal received for review into his proposal.

We forwarded our investigation report to NSF's Deputy Director and recommended that the subject be found to have committed misconduct in science and that NSF prohibit the subject from serving as a peer reviewer for 5 years. We recommended no additional action to protect NSF from further plagiarism because the subject resides and works in a foreign country and does not submit proposals to NSF. We believe the subject's actions in this case demonstrate the importance reviewers must place on upholding the confidentiality of peer review and that plagiarism of any material, regardless of content, from any part of a proposal submitted to NSF is unacceptable.

Proposal Seeking Funds for Already Completed Research

Several reviewers alleged that in a proposal to NSF, a recent Ph.D. recipient misrepresented research that had already been conducted as work that would be done under the NSF award he sought. When we wrote to the subject, he admitted that all of his proposed work had already been performed when he submitted the proposal. He also informed us that he had directed that his collaborator's name be signed on the proposal's certification page without obtaining the collaborator's permission.

We agreed to permit the university to conduct its own investigation. The investigating committee concluded that, although the subject's proposal was "misleading" and "nowhere . . . discuss[ed] research in progress or to be done in the future," the subject intended to use NSF award funds to support new research that was an outgrowth of the work misrepresented as new in his proposal. The university did not find misconduct, but the Provost, in a letter clarifying the university's findings for us, "emphatically" agreed that the subject's action was a serious deviation from accepted practices. Regarding the false signature, the university found that the subject had committed misconduct.

The Provost and other university officials discussed with the subject the seriousness of his acts and warned him that future misconduct would have serious repercussions. The Provost also directed that the subject's department chair "carefully review" the subject's next proposal. The university has also taken steps to ensure that new faculty members learn the ethical requisites of proposal writing and that their senior colleagues play a more active mentoring role.

We believe that the subject committed misconduct both in proposing work that had already been done and in having his colleague's signature put on the proposal without permission. We have recommended that NSF make a finding to that effect. The subject's actions, if tolerated, would subvert NSF's proposal evaluation process, which is predicated on the idea that, in deciding on awards, NSF judges proposed new work. Neither reviewers nor NSF staff members can assess the intrinsic merit of proposed work if investigators misrepresent the work for which they seek funding.

The scientific community respects the integrity of NSF's proposal review process. The subject's disregard for the integrity of this process seriously deviates from accepted practice in his community, and it is therefore appropriate that NSF affirm the community's standards with a finding of misconduct in this case.

However, we believe that several factors mitigate the seriousness of the subject's action in this case.

- There is no evidence that the subject's action was part of a purposeful, coordinated deception.
- The subject took responsibility for his actions when we contacted him and fully cooperated in the inquiry and investigation.
- There is little difference between the research that the subject intended for NSF to support and the research he proposed to NSF.
- The subject's age and inexperience, in the words of the University's Provost, led him not to "associate with this deception the gravity that most others would, particularly experienced researchers."

We also believe that a false signature is an inherently serious matter and warrants a finding of misconduct. In this case, however, we believe its seriousness is mitigated by the fact that the signature did not, and was not intended to, mislead NSF about the role the collaborator would play in executing the research plan.

We recommended that the subject be sent a letter of reprimand. We also recommended that, for 2 years, the subject and the subject's institution be required to certify that any proposals he submits accurately state what parts of the research agenda have and have not been performed. These recommendations are awaiting NSF's action. We believe that these recommended actions adequately protect the integrity of NSF's proposal review process while, at the same time, they permit an inexperienced researcher to put this incident of misconduct behind him and pursue his scientific career.

Falsification of Data by a Graduate Student

We were informed by the institutional representative of a large eastern university that a graduate student, who was supported by an NSF grant to his thesis advisor, had allegedly falsified data for his Ph.D. research. The institution forwarded the allegation to the graduate honor court according to institutional procedures.

The complainant had observed that a photograph of an analytical result presented by the subject at a professional meeting lacked sufficient clarity. After the meeting, the complainant requested that the subject reanalyze his sample. The results of two subsequent analyses by the subject of the same sample proved different from each other and from the original result presented at the meeting. Additional duplicate analyses of other samples by

the subject produced contradictory results. Later, the subject told the complainant that he had falsified data for his thesis.

The graduate honor court determined that the allegation should be investigated. At the honor court's investigation hearing, the subject pleaded guilty to falsifying data. The institution accepted the honor court's findings based on the subject's confession, and the subject was permanently dismissed from the institution with a statement on his official transcript that he had been dismissed for a violation of the graduate honor code. We were informed that the editors of the journals to which the subject's falsified data had been submitted had been notified. We learned that the subject, after leaving the institution, had returned to his native country.

We accepted the institution's investigation report, which relied on the graduate honor code procedures. The sanctions imposed by the institution, combined with the fact that the subject had returned to his native country, led us to conclude that it was unlikely that the subject would be in a position to apply for, and receive, NSF funds in the future. Hence, no further action was necessary to protect the use of public funds and we closed this case.

We noted that many institutions have similar graduate honor code policies and procedures. In this case, the subject admitted his guilt and therefore the adjudication was straightforward. Institutions with similar procedures may encounter more complex investigations if the subject does not admit his or her guilt. It is especially important for institutions to determine how the use of a graduate honor court fits in with the policies and procedures for handling allegations of misconduct in science and engineering established by NSF's regulation (45 C.F.R. §689). In particular, good records of matters involving misconduct in science should be kept, and NSF should be notified when the investigation stage is reached.

Failure to Disclose Financial Conflict of Interest

We learned that although a postdoctoral fellowship application submitted to NSF contained the required recommendation from the applicant's dissertation advisor, the materials the advisor submitted did not disclose that the advisor and applicant were married. As such, the advisor stood to gain financially from any possible award, yet he did not disclose this financial conflict of interest. The NSF program officer expected that questions on the recommendation form would have prompted the disclosure of such information.

Both the applicant and the advisor told us that they thought this information had been disclosed in the application. The applicant said that this was the second of four fellowship applications that had been submitted; the other three were sent to another NSF program office, another federal agency, and a private foundation, respectively. The advisor had submitted recommendations supporting each application. We obtained records for two of the other applications, including the other NSF application, that showed that he had fully disclosed his marriage to the applicant.

The advisor said that he thought that, unlike the requirements for the other NSF application, for the application in question he had to provide information on the form accompanying the

program announcement. Therefore, space constraints dictated that he edit and abbreviate the information he had previously supplied for the other NSF application, and he inadvertently deleted the disclosure of their marriage. The information in the proposal jacket confirmed that the recommendation form in this application contained edited information that on the other NSF application, appeared on sheets attached to the recommendation form.

We could find no basis for the thesis advisor's impression that he was to put the information on the recommendation form for one NSF application but not for the other. However, since both applications were for fellowships of approximately the same amount, there was no reason to believe the advisor would have intentionally disclosed his relationship in the first application yet omit it from the second.

We concluded that there was reasonable evidence to support the subject's statement that the lack of disclosure was inadvertent. At our request, the advisor submitted a disclosure letter to the program office. We closed this case because there was insufficient basis for pursuing this matter. This case illustrates the importance of paying careful attention to financial disclosure when submitting information supporting another PI's proposal. On June 28, 1994, NSF issued an investigator financial disclosure policy and revised

award conditions that require institutions to "maintain written and enforced policies" (see discussion in Legal on page 40).

Consulting Relationships With SBIR Proposals

We closed two cases this period that involved allegations of plagiarism in SBIR proposals. These cases differed from those failed collaborations discussed in Semiannual Report Number 10 (pages 27 through 30) in that these cases involved scientists from academia who had collaborated with PIs from small businesses in preparing SBIR proposals. The academic scientists had expected to be consultants on any awards resulting from the submitted proposals, but they were not. A formal consulting agreement had not been executed before the scientists provided materials that were included in the proposals.

In the first case, we were informed that an academic scientist had written most of the subject's SBIR proposal. Conversations between the subject and the scientist had led the scientist to believe that he would be a consultant on the project if an award was made. It was alleged that the scientist's contribution to the proposal had not been acknowledged, and that the subject as PI had failed to cite a few lines of text that were copied from a manuscript of a paper by the scientist.

In communications with the subject, we learned that he incorrectly believed that a proposal did not have to conform to the rigorous standards of scholarship expected of published papers when citing the sources of information. We corrected his impression and, at our suggestion, he submitted an amendment to his award jacket that acknowledged the scientist's contributions to the proposal, cited the material copied from the scientist's manuscript, and corrected numerous other citation errors. We determined that the scientist's and the subject's discussions had not resulted in a formal consulting agreement, and that a disagreement developed late in the collaboration when the subject discovered that the scientist had a consulting relationship with one of the subject's competitors. Without a formal consulting agreement, the subject was not obligated to name the scientist as a consultant; however, he should have acknowledged the scientist's contributions to the proposal and cited the material taken from his manuscript. We concluded that although the subject did not act professionally, there was insufficient evidence to pursue a finding of misconduct in science.

In the second case, we were informed that a scientist had assisted with the preparation of, and served as a paid consultant on, an SBIR Phase I award designed to assess the feasibility of the research project. At the subject's request, the scientist sent him

ideas for an SBIR Phase II proposal, which, if awarded, would have supported the research effort on the project. It was alleged that the scientist's ideas appeared in the subject's Phase II proposal; however, the scientist was not listed again as a consultant. We determined that the general ideas submitted by the scientist that appeared in the Phase II proposal were not unique. Although the scientist had assumed that the consultancy role would continue in any Phase II award, the subject as PI was under no obligation to do this. The PI was free to identify those who would most appropriately serve as consultants on this phase of the project. The subject was

not obliged to continue their collaborative relationship simply because the research was a continuation of their earlier collaborative work. Hence, this case was closed because there was no substance to the allegation.

These cases illustrate how allegations of misconduct can arise from poor communications and a lack of consideration between collaborators. As with any collaborative effort, the problems discussed here might have been avoided if the principals had formalized their working relationship in advance.

Table 3: Misconduct Case Activity

	FY 1994 First Half	FY 1994 Last Half
Active Cases From Prior Period	87	80
Received During Period	27	20
Closed Out During Period	34	20
In-Process at End of Period	80	80

Outreach Activities

In addition to their work on misconduct in science cases and on inspections, the Office of Oversight's science and engineering staff published two papers and made presentations at three professional meetings. *NSF's Definition of Misconduct in Science*, appeared in the Centennial Review, XXXVIII, No. 2, spring 1994, pp. 273-296, published by Michigan State University. *Approaches to Misconduct in Science: An Introduction* appeared in *Accountability to Research*, 3, No. 4, pp. 1-6 (1993). The Oversight staff also made three poster presentations at the Convocation on Scientific Conduct sponsored by the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine in June 1994; a presentation to the Department of Health and Human Service's Commission on Research Integrity in July 1994; and a presentation at the Division of Chemistry and the Law at the 208th National Meeting of the American Chemical Society in August 1994.

INSPECTIONS AND EVALUATIONS

In March 1993, the PCIE issued its *Quality Standards for Inspections* to guide the conduct of inspection work. These standards define an inspection as a process, other than an audit or investigation, that evaluates, reviews, studies, and/or analyzes the programs and activities of a department or agency to provide information to managers for decisionmaking; make recommendations to improve

programs, policies, and procedures; and recommend administrative action.

We view inspections as an especially effective approach for OIG oversight in our agency because of the highly technical nature of NSF's mission. Our inspections are on-site reviews both within NSF itself and at institutions that receive NSF funding. OIG staff assesses organizations' compliance and

effectiveness in three major areas: finance, administration, and achievement of program goals in research and education. Our inspections supplement OIG's ongoing audit and investigative activities by broadening accountability beyond financial and administrative compliance requirements to assess the responsiveness of research and education activities to program goals. Our external, on-site reviews also promote an increased awareness by PIs and their sponsoring institutions of the importance of accountability in the management of, and performance under, NSF awards. In all inspections, we act as an unbiased conduit for PIs' and university officials' comments, criticisms, and suggestions on NSF's operations.

The composition of any inspection team depends on the expertise required to understand the research or activity to be inspected. Team members may include scientists and engineers, auditors, computer specialists, investigators, lawyers, or management/program analysts. If the expertise is not represented by OIG staff, consultants from the private sector or other federal agencies may be used. Evaluation of the inspected institution's policies and procedures, award documentation, and related financial records is performed both before and during the inspection.

During our inspections, we conduct reviews in the following three areas:

Financial Review

Our objectives here are to evaluate the adequacy of internal controls for NSF awards within the department or other institutional subunit and to assess compliance with the institution's financial policies and procedures established to meet federal laws and regulations.

Management and Administrative Review

The objectives of this portion of the inspection are to • evaluate the institution's ability to resolve allegations of misconduct in science and to determine the adequacy of the institution's handling of misconduct allegations; • assess the institution's compliance with regulatory requirements, such as drug-free workplace, lobbying certification and reporting, and nondiscrimination; • assess the climate for advancement by women and racial minorities as scientists and faculty members; and • test, document and evaluate any institutional requirements governing employees' financial disclosures. After June 28, 1995, when the NSF Investigator Financial Disclosure Policy becomes effective, we will begin reviewing the systems that inspected institutions have in place to comply with this policy.

Program and Research Review

The objectives of this portion of the inspection are to • assess the scientific aspects of those programs funded under the awards reviewed; • evaluate the adequacy of the institution's and other institutional support for these efforts; • determine whether the institution's internal controls for NSF awards are adequate; and • develop an understanding of the quality and efficiency of NSF's program review and award process including NSF program officials' interactions with PIs.

THREE MOST RECENT INSPECTIONS

We assessed compliance and performance based on NSF's awards to PIs at a private, non-profit marine biological laboratory; a private, nonprofit academic research survey organization; and a University department of political science.

Inspection at a Private, Nonprofit Laboratory

We conducted an inspection at a private, nonprofit biological laboratory where we reviewed performance and compliance under nine NSF awards. In conducting our reviews, we interviewed laboratory personnel and administrators and reviewed relevant documents. For over a century, this laboratory has held a unique role in biological research and education. It serves as a laboratory and library research facility as well as an educational institution for scientists and advanced students worldwide. During the summer, the estimated 200 year-round personnel interact and exchange ideas with over 1,000 students, summer research scientists, and faculty members who teach courses. These people benefit not only from interacting with each other but with scientists working at other research institutions located in or near the laboratory. We found that the mixture of people, facilities, and location created a uniquely stimulating environment for scientists and students alike.

The laboratory generally complied with NSF and other federal requirements. However, we did identify several conditions that we consider to be materially deficient and have recommended that a financial and compliance audit be conducted.

As a result of our inspection, we recommended, and the laboratory agreed, that:

- when referring to alleged misconduct in science, the laboratory would reconsider, in view of "fraud's" common law meaning, the use of the terms "scientific fraud" and "fraudulent scientific activity" in the laboratory's *Policies and Procedures on Scientific Integrity*;
- it would revise its financial disclosure policy;
- consider formally keeping demographic statistics on its course directors, faculty members, and students so that it can assess its achievements in attracting minorities and female personnel and students; and
- ensure that each current and future student who participates in the Research Experiences for Undergraduates (REU) Program, before working at the laboratory or at one of its field sites, is adequately trained in laboratory safety and the relevant animal care and use protocols and procedures.

Based on information obtained during our inspection, we recommended that the Assistant Director for NSF's Directorate for Biological Sciences (BIO), evaluate the number, distribution, and training of rotators within the various programs in BIO. This evaluation should include a consideration of the PIs' concerns that the programs in BIO are not retaining, or passing on to new rotators, an adequate institutional memory. The Assistant Director explained that all BIO divisions are organized into clusters that consist of two to six program officers. One or two permanent program officers and one to four visiting scientists are assigned to each cluster. In NSF's Division of Environmental Biology (DEB), where some laboratory PIs were concerned about the high ratio of visiting scientists to permanent program officers, two DEB staff members have recently received promotions that removed them from their program officer positions. These positions have been temporarily filled by visiting scientists who will be replaced by permanent staff members when appropriate candidates are available. It is BIO's intent to maintain a dynamic mix of visiting scientists and permanent staff.

Inspection at a Private, Nonprofit Survey Institution

This inspection at a private, nonprofit institution that performs academic survey research was based on nine NSF awards. Although the institution is an independent organization, it is closely affiliated with a major research university. The institution contains two loosely related research groups: one group does grant supported, academically oriented research and the other group administers surveys that are typically funded by contracts. Three of the grants we inspected were part of a large and continuing data collection effort that creates a data resource for social scientists nationwide. Data collection practices appeared to be careful and efficient, with the PIs working closely with technical staff members to minimize data collection, preparation, and processing costs.

Although the institution does not provide formal graduate training leading to advanced degrees, many graduate students from the university were involved in research that they viewed as an integral part of their education. The graduate students we talked to were pleased with their training at the institution, stressing that their frequent interactions with the PIs had helped them learn to fashion social science arguments based on quantitative data.

We interviewed personnel at the institution as well as personnel at the university with which the institution was affiliated, and we reviewed relevant documents. The institution generally complied with NSF award and other federal requirements. Compared to other grantees that we have audited or inspected, this institution had one of the best systems in place to document its cost and price analyses of purchases charged to federal awards. We noted immaterial instances of noncompliance and internal control weaknesses and made recommendations to correct them.

In response to our findings, the institution stated that it:

- has taken steps to strengthen internal controls over award transactions and travel documentation and authorization;
- "is revising its misconduct in science procedure to govern PIs and other senior research personnel who are full time [institution] employees." In its revisions, it also plans to clarify that the procedures apply to graduate students working at the institution, specify when NSF is to be informed about allegations, and establish a standard of proof. The institution continues to prefer a narrow definition of misconduct in science restricted to a "deliberate effort to deceive" and believes that grossly negligent wrongdoing can be handled in a less formal way. The institution also noted that

the inspection report "has prompted an extensive review" of the misconduct policy at the university with which it is affiliated;

- will increase awareness of the requirements for appropriate Institutional Review Board action on issues concerning research on human subjects; and
- will expand its efforts to increase awareness of federal regulations about nondiscrimination and drug-free workplace, continue its efforts to recruit minority scientific/professional personnel, and develop and promulgate its own policy on financial disclosure and conflicts of interest.

In addition, NSF's Assistant Director for Social, Behavioral and Economic Sciences has initiated a study to examine funding and administration of the Directorate's large survey grants. The study will conclude before the next renewal review so that any valuable administrative changes can be implemented. In making REU awards, the NSF Economics Program agreed to place more emphasis on the career goals of the undergraduate participants and the quality of their educational experience.

Inspection at a University in the Northeast

Our inspection at a political science department at a state university in the northeast was based on 10 awards: 8 to support the research of 5 PIs, 1 to support a graduate student's doctoral dissertation research, and 1 to support an REU site grant.

The political science department is pursuing research and educational excellence by focusing narrowly on sub-fields in which it can realistically hope to assemble excellent groups of researchers and by giving limited attention to areas that, in other institutions, are considered to be at the core of the discipline. The department has three topical specialties, each involving the quantitative analysis of politics. Graduate students and faculty members agree that the department provides excellent quantitative methodology training and extensive practical research experience, and they report that the department's training has served recent graduates well. Collaborations between students and faculty members are frequent and often result in joint publications. We were impressed with the faculty's generous allocations of publication credit to graduate students and with the high morale among the graduate students. Graduate students believed external grants increased the general level of research activity in the department and thus benefited the entire graduate student body. Faculty members

praised NSF's proposal and award system, characterizing the proposal reviews they received from NSF as thorough, fair, and knowledgeable and comparing NSF reviews favorably to those they received from leading journals in their field.

We found no major deficiencies. The university generally complied with NSF's and other federal award requirements. However, we did make some compliance and internal control recommendations in the financial and administrative review areas.

As a result of our recommendations, the university stated:

- It is aware of the importance of, and has been seeking, an adequate mechanism to effectively administer REU supplement awards to NSF grants. However, the University believes that both REU awards in question fulfilled the expectation of the REU award program, which is to bring undergraduates into the research environment.
- As a participant in the *Federal Demonstration Project (FDP)*, it is exempt from most NSF and OMB Circular A-21 requirements. It also believes "General purpose equipment is not a prior approval reserved for either the federal government or the NSF." *We note that the university is in error in this belief because Circular A-21 cost principles are applicable to all universities, including those under FDP. Circular A-21 does not allow expenditures for general purpose equipment to be charged directly to a grant.*

- Its procedures are being rewritten to create a formal university Policy on Misconduct. The university noted that our comments will be instrumental in the development of this policy.

Follow-up on Previously Reported Inspections

Inspection at a Chemistry Department. We inspected a chemistry department at a university located in the southeast where we reviewed performance and compliance under 18 NSF awards (Semiannual Report Number 10, page 36). Our review was generally favorable in all areas. However, we did find that the university's *Policy and Procedures on Ethics in Research* do not specify a standard of evidence for an investigation. We also found that the University did not have a formal, written policy on access to laboratory data generated under NSF awards. We made recommendations addressing these findings to which the University stated that it will investigate NSF deferred allegations of misconduct in science in accordance with NSF regulations, including the 'preponderance of the evidence' standard; and it will issue to all individuals working in its laboratories a written policy describing the university's responsibility for access and retention of research data, its maintenance, and the procedures under which records may be allowed to accompany a PI or supported researcher to a new location.

In addition, NSF's Assistant Director for Mathematical and Physical Sciences (MPS) stated that he is aware that site visits are important to effective management, but doubts that the severe limitation on travel funds would be alleviated to permit more site visits.

Inspection at an ERC. We conducted an inspection at 1 of NSF's 18 ERCs (Semi-annual Report number 10, pages 35 and 36). We found this Center's internal controls and compliance with applicable regulations generally satisfactory. However, we did find that the Center needed to establish a procedure to approve costs when they exceed original budgeted amounts, to develop procedures to ensure that personnel activity reports reflect an after-the-fact confirmation of effort for individuals working on federal awards, and to develop separate expenditure accounts to ensure that cost sharing is traceable in the official books of account.

In response to our financial recommendations, the university stated that:

- It will calculate "other support" with an appropriate audit trail.
- It believes that current University policies and procedures in these areas are responsive to NSF's previous OIG audit and comply with OMB Circular A-21 requirements.

In response to our suggestion that the university give more attention to research ethics and misconduct in science, the university said that • the College of Engineering offers a new course, *Engineering Ethics*, that is open to all students of junior standing; • the College of Engineering is no less sensitive than any other campus unit to the requirements and procedures pertaining to academic misconduct; and • the university's policies and procedures complied with NSF regulations on Misconduct in Science and Engineering.

In response to our recommendations concerning sharing of proposals for review, commercialization of Center inventions, and storage and retention of data, the university said • it welcomes the OIG recommendation about sharing review copies of proposals only with NSF approval and it plans to provide this advice to all members of the College faculty; • it is addressing the problem it has had regarding the commercialization of promising technologies; and • it does have guidelines on the ownership and retention of student works; however, "No federal policies require the University or Center to have uniform policies on the recording and retention of data."

In response to our recommendations, NSF's Directorate for Engineering stated that:

- Its policy on the eligibility of ERC participants for individual investigator awards has been clearly stated in the ERC program announcement: "Participation in a center does not prevent individual investigators from receiving NSF support for their own research in other NSF Programs."
- Its letter to reviewers of proposals states that the proposal and reviews are confidential and they are not to be shared with anyone. The Directorate will ensure in the future that this information is consistently included in letters to reviewers and panelists.
- The rule for disclosure of inventions and publications to NSF should be rescinded if it is judged to be noncrucial and is not enforced. The Directorate for Engineering referred our recommendation to the NSF Office of General Counsel.

OIG attorneys provide legal advice on all
OIG activities, including investigations,
audits, and oversight of NSF's functions
and programs. OIG attorneys supported
many of the activities that are described in
other sections of this report.

Under section 4 (A)(2) of the Inspector
General Act, OIG is required to review
and make recommendations concerning
legislation and regulations that affect NSF
and NSF-funded activities. OIG attorneys
are responsible for conducting these
reviews as well as general oversight of
NSF's legal activities.

L E G A L

NSF Issues Final Financial Disclosure Policy for PIs

In Semiannual Report Numbers 7 through 10 (pages 29, 33, 41, and 43, respectively), we discussed progress on a financial disclosure policy for PIs. In this reporting period, NSF adopted an investigator financial disclosure policy, which was published in the Federal Register.

As originally proposed, the financial disclosure policy required that proposers disclose PIs' financial interests to NSF directly. However, most of those who submitted comments argued that institutions should collect financial information and manage conflicts. As a result of these comments, the final policy does not require disclosure of financial interest or even conflicts to NSF unless an institution is unable to resolve a particular conflict satisfactorily. The final policy requires that an institutional representative certify that the institution has implemented an appropriate conflict-of-interest policy, all required financial disclosures have been made, and either (1) no actual or potential conflicts exist or (2) all actual or potential conflicts have been managed satisfactorily or disclosed to NSF. All PIs must certify that they have read and understand their institution's conflicts policy, that all financial disclosures required by the policy have been made, and that they will comply with all conditions imposed by the institution to manage conflicts. These certifications must accompany all proposals submitted to NSF.

The financial disclosure policy requires that grantee institutions that employ more than 50 persons maintain their own conflict-of-interest policies with certain minimum requirements. Persons responsible for the design, conduct, or reporting of research or educational activities funded or proposed for funding, by NSF must disclose to their institution their (and their immediate family's) financial interests related to proposed or funded NSF research. Institutions must also maintain records of such financial disclosures and actions to manage conflicts for 3 years after work under the award is complete or any government action that involves the records, whichever is later. NSF has the authority to review these institutional records, as they relate to NSF awards, to ensure that their actions adequately protect the integrity of NSF-funded research and education activities. NSF will coordinate these reviews with HHS so that government resources are used efficiently and institutions are not plagued by numerous reviews.

NSF's new financial disclosure policy was the result of extensive coordination among NSF, HHS, the Office of Science and Technology Policy, and OMB. The policy will become effective on June 28, 1995.

OIG Identifies Vulnerability for Program Managers Serving as Officers or Board Members for Scientific Societies

We received an allegation that an NSF program manager, who was also an elected officer of a scientific society, influenced fellow members of that scientific society's board of directors by virtue of the program manager's position at NSF. On inquiry, we determined that the complainant had no evidence or any definite knowledge that in a specific situation the program officer exerted influence on any fellow board member. The complainant explained that his allegation originated in the course of an election campaign for the society's officers and board members and was based exclusively on his observation of the unusual deference paid to NSF staff by those eligible to compete for NSF funds. We also found that the program officer managed proposals and/or awards on which three fellow board members were PIs. Both the program manager's supervisor and conflicts official as well as the NSF Designated Agency Ethics Official (DAEO) knew and approved of the program manager's becoming an officer and board member. However, neither apparently anticipated or addressed in writing the biases or conflicts of interests (COIs) that might arise for the program officer due to close professional association with fellow board members or the

appearance of being a less-than-impartial NSF program manager when handling proposals and/or awards for which the PIs were fellow board members.

Although we found no substance to the allegation that influence was exerted by the program manager, we did discuss with NSF's DAEO the possibility of bias or COIs arising out of the close professional association. The DAEO suggested, and we agreed that, in the future, when he provides his written approval for NSF staff to hold office or membership on a policymaking board of a scientific society, he will advise the individual scientist-program manager to be alert to conflicts and obtain written advice from a conflicts official in cases where proposals and/or awards for fellow board members or officers are placed under the responsibility of the program manager. The conflicts official, in written advice, will balance out all relevant factors in determining whether the program manager or a substitute program manager should handle the proposals and/or awards in question.

Need for Procedures to Ensure Enforcement of Actions Taken in Misconduct Cases

Under NSF's regulation on misconduct in science, when NSF's Deputy Director decides that the subject of an OIG investigation has committed misconduct, she then decides what action to take to protect NSF's interests. The actions can range from a letter of reprimand only (which has no effect on either the subject's ability to apply for and receive NSF grants or the subject's availability to serve as a peer reviewer of NSF proposals) for the least serious cases, to government-wide debarment (which prohibits the subject from receiving grants from any federal agency for a certain period of time) for the most serious cases. Between these extremes are a variety of actions appropriate for more moderate misconduct cases. For example, in several recent cases, one of the actions NSF took was to require, for a specified period of time, that when a subject submits a proposal to NSF the subject must also submit (1) a certification by the subject that the proposal is free of misconduct in science, and/or (2) a certification by an official at the subject's institution that the official has reviewed the proposal and, to the best of the official's knowledge, it is free of a repetition of the type of misconduct that was the focus of the case. In a case involving violation of the

integrity of the confidential peer review process, we recommended that the Deputy Director prohibit the subject from serving as a peer reviewer for NSF proposals for a specified period of time.

In Semiannual Report Number 5 (page 38), we discussed NSF's implementation of procedures to ensure that every new contractor, grantee, and PI is checked against the General Services Administration's list of individuals and companies that have been debarred by any federal agency. Since then, we have forwarded several misconduct cases to the Deputy Director in which we recommended actions other than debarment, such as the certification requirements and reviewer prohibition discussed above. The Deputy Director has imposed some of these other actions on the subjects, and other cases are pending. However, NSF has no procedures in place to ensure that these other actions are complied with. There are relatively few subjects against whom NSF has taken these actions, but there are more forthcoming, and, since the actions are generally imposed for several years, the number may soon become unwieldy. We therefore recommended that NSF implement procedures to ensure that subjects found by NSF to have committed misconduct comply with all restrictions and prohibitions imposed on them by NSF.

Privacy Protected for Individuals Who Did Not Commit Misconduct

An individual sued HHS under FOIA to obtain the names of all whistleblowers as well as everyone who had (1) allegedly committed misconduct in science, or (2) been accused of, but been found by HHS not to have committed, misconduct. (As discussed in Semiannual Report Number 9 [page 38], HHS publicizes the identities of everyone it finds to have committed misconduct in science.) When deciding whether to disclose personal information about an individual under FOIA, agencies are required to determine whether the privacy interest of the individual is outweighed by the public interest in disclosure. HHS argued that whistleblowers and individuals accused of misconduct in science but found innocent have a substantial privacy interest, which greatly outweighs any public interest in disclosure of their identities. This case was of considerable concern to NSF because it would establish a legal precedent directly applicable to NSF were someone to seek such identifying information under FOIA for NSF whistleblowers and innocent subjects of allegations of misconduct in science.

The federal district court held that HHS (1) could withhold the identities of the whistleblowers, but (2) must disclose the names of those accused of, but found by HHS to have not committed, misconduct. HHS appealed the decision, and on August 5, 1994, the U.S. Court of Appeals for the District of Columbia Circuit (1) affirmed HHS' withholding of whistleblowers' names, and (2) reversed the lower court and held that HHS does not have to provide the names of individuals not found by HHS to have committed misconduct in science.

Administration Requires That Agencies Implement Environmentally Sensitive Policies

On October 22, 1993, President Clinton issued Executive Order 12873, which requires that all executive agencies take steps to increase environmental consciousness, provide a model for reducing waste, and spur innovation in reducing waste. The Executive Order requires that agencies, among other things:

- implement affirmative procurement programs that maximize environmental benefits;
- ensure that agency affirmative procurement programs purchase products that meet or exceed EPA guidelines;
- maximize the electronic transfer of documents and the double-sided printing of government documents;

- establish goals for solid waste prevention and recycling; and
- implement programs to promote cost-effective waste prevention and recycling of reusable materials.

We determined that NSF has not yet taken any explicit steps to comply with the requirements of this Executive Order, and we recommended that it do so. (However, we do recognize that NSF has, on its own initiative, been the leader in the federal government in developing a system for the electronic submission of grant proposals.) Because most of NSF's funds are provided to grantees to conduct research and education in science and engineering, we specifically recommended that NSF evaluate to what extent it should amend its grant general conditions to require that grantees act in a manner that promotes the objectives of Executive Order 12873. NSF has not yet responded to our recommendations.

NSF Finalizes Touhy Regulation

In Semiannual Report Numbers 9 and 10 (pages 41 and 43, respectively), we discussed NSF's progress in implementing our recommendation that NSF adopt a regulation to establish procedures for NSF's response to subpoenas. The regulation addresses subpoenas and other demands for current and former NSF employees to testify about, or produce records concerning, NSF matters during private litigation or other proceedings to which the federal government is not a party. In this reporting period, NSF published first a proposed and then a final rule establishing these procedures. The procedures prohibit current and former NSF employees from complying with those demands without the permission of the Director or the Director's delegate; OIG employees and former employees are prohibited from complying with such demands without the permission of the Inspector General or the Inspector General's delegate. In our view, these procedures will minimize the disruption of official duties caused by compliance with these demands and ensure that NSF has control over the release of official information.

OTHER LEGAL ISSUES

Use of Program Income

OMB recently amended its minimal guidelines on what federal agencies may allow its grant recipients to use program income for. Program income is "gross income earned by the grantee that is directly generated by a supported activity or earned as a result of the grant." The OMB guidelines state that, generally, during the period of the grant, program income is to be retained and used to further the objectives of the funded project; however, virtually no program income is actually subject to this requirement because the guidelines exclude program income derived from "license fees and royalties for copyrighted material, patents, patent applications, trademarks, and inventions." Under the OMB guidelines, NSF has the authority to limit the breadth of this exclusion from and thus broaden the applicability of the project income requirement. In our view, NSF's general policy ought to be, at least for grants that anticipate the development of a potentially marketable product (such as a laboratory instrument, textbook, or kit of educational materials), that, during the term of the NSF funding, program income should be used to further the objectives of the project. We recommended that NSF amend its grant general conditions accordingly, and NSF is currently considering our recommendation.

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We are responsible for reporting to Congress and following up on the resolution of audit recommendations. From April 1, 1994, through September 30, 1994, NSF resolved five reports with significant audit recommendations.

SIGNIFICANT AUDIT RECOMMENDATIONS FROM PREVIOUS SEMIANNUAL REPORTS

Professional Foundation Lacks Documentation

Period First Reported: April 1, 1993 - September 30, 1993

NSF awarded two grants, totaling \$312,612, to a nonprofit corporation to support the development and enhancement of the mathematic and scientific skills of precollege Hispanic students. We questioned \$33,596 because salaries, materials, and supplies were not supported by adequate documentation and claimed costs exceeded recorded costs. We also found that the grantee did not maintain an approved indirect cost allocation plan. NSF determined that \$23,511 of the questioned costs were unallowable.

Cerro Tololo Inter-American Observatory

Period First Reported: April 1, 1993 - September 30, 1993

NSF awarded a 5-year, \$158,543,300 cooperative agreement to the Association of Universities for Research in Astronomy, in support of the National Optical Astronomy Observatories. The Cerro Tololo Inter-American Observatory (CTIO), located in La Serena, Chile, is one of the three observing sites that make up the National Optical Astronomy Observatories. We reviewed CTIO operations and about \$3.7 million in costs claimed under the cooperative agreement. We questioned \$16,904 and made recommendations to decrease operational costs and improve CTIO's administrative support. NSF disallowed \$195 of the questioned costs.

NSF disallowed \$4,522 related to the consultant costs, and it allowed the remainder of the costs based on support and justifications provided by the grantee.

Museum Lacks Support for Expenditures

Period First Reported: October 1, 1993 - March 31, 1994

NSF granted a museum 33 awards to support various projects in science education. The museum claimed \$2,243,059, and we questioned \$111,413 because documentation supporting claimed costs was inadequate and consultant costs exceeded the allowable rates.

NSF disallowed \$4,522 related to the consultant costs, and it allowed the remainder of the costs based on support and justifications provided by the grantee.

Nonprofit Corporation Lacks Support and Approvals for Costs Claimed

Period First Reported: October 1, 1993 - March 31, 1994

NSF awarded a \$1.5 million grant to a private, nonprofit corporation to make and distribute a film that shows the relationship between mankind and the natural world. The grantee claimed \$281,019, and we questioned \$112,324. The grantee claimed costs that were not actually incurred, overhead and fees claimed were not approved, documentation to support claims was not available, and travel costs were claimed that were not allowable by federal cost principles. NSF disallowed \$45,997, and the grantee provided acceptable information on the remainder of the questioned costs.

Review of Airline's Proposed Rate for Work on NSF's LC-130 Aircraft

Period First Reported: October 1, 1993 - March 31, 1994

In response to a request from NSF's Office of Contract, Policy, and Oversight (CPO), we reviewed the detail supporting the labor rates in a proposal from a New Zealand firm to maintain NSF-owned aircraft. We questioned \$12 New Zealand of the proposed \$72-New Zealand rate because indirect costs and adjustments did not comply with the Federal Acquisition Regulation.

The final rate used in the contract was the proposed rate of \$72 New Zealand, which was determined by the contracting officer to be the lowest available price.

REPORTS WITH OUTSTANDING MANAGEMENT DECISIONS

This section identifies audit reports where management has not made a final decision on the corrective action necessary for report resolution within 6 months of the report's issue date. CPO is tasked with making management's decision concerning external audit reports. At the end of the reporting period, there were 22 audit reports with questioned costs that were not resolved and 2 additional audit reports with outstanding compliance issues requiring management decisions. There were a total of 9 reports over 6 months old requiring final resolution decisions at the end of the last reporting period.

Management Decision: *Management's evaluation of audit findings and recommendations and issuance of a final decision concerning management's response to such findings and recommendations.*

<i>Report Number</i>	<i>Title</i>	<i>Date Report Issued</i>
Reports with questioned costs:		
91-1038	Prism Production	12/21/90
93-1050	Museum of Science and Industry	06/08/93
93-1060	Antarctic Support Associates	09/30/93
93-1061	Vanderbilt University	09/30/93
93-1065	Catholic University of America	09/30/93
93-1066	American University	09/30/93
94-1002	Top-Vu Technology, Inc.	11/04/93
94-1004	Council of State Science Supervisors	11/19/93
94-1006	Energy Concepts Company	01/10/94
94-1007	McLean Hospital	01/10/94
94-1009	Network Dynamics, Inc.	02/01/94
94-1012	Rhode Island Hospital	02/05/94
94-1013	Friends of Fermilab	02/10/94
94-1015	Advanced Surface Technology, Inc.	02/18/94
94-1017	American Express Travel	03/04/94
94-1018	Maine Mathematics & Science Alliance	03/14/94
94-1019	Draco Technology	03/14/94
94-1021	Joel Popkin & Co.	03/23/94
94-1022	Life Lab Science Program, Inc.	03/09/94

<i>Report Number</i>	<i>Title</i>	<i>Date Report Issued</i>
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94-4023	National Council of Teachers of Math	02/22/94
94-4051	Pacific Science Centers Foundation	03/21/94
94-5099	Bishop Museum	11/03/93

Reports with only compliance recommendations:

94-4030	California Universities for Research in Earthquake Engineering	03/14/94
94-5168	Computer Museum	11/10/93

Commercial Firm Earns Interest on NSF Funds

Period First Reported:
October 1, 1990 - March 31, 1991

NSF awarded two grants totaling \$2,225,496 to a privately owned, for-profit corporation that provides technical and scientific information to commercial television stations. The corporation claimed \$2,113,620, and we questioned \$410,338 because the corporation charged unsupported salary costs to the grant, did not make invoices supporting expenditures available, and charged indirect costs at a rate higher than the actual or maximum provisional rate. We recommended that the corporation return an additional \$21,175 of interest earned on NSF advances to NSF. NSF has developed a position paper for use in its next negotiations with the grantee. Final action will depend on the grantee's response to NSF's position.

Museum of Science and Industry

Period First Reported:
April 1, 1993 - September 30, 1993

NSF awarded over \$1.3 million to a not-for-profit museum to support construction of a new exhibit. NSF made the award with the expectation that the grantee would cost share approximately \$3.7 million of the project's total costs. There was a significant gap between the funding received and the funding needed. The grantee claimed \$150,777 against the NSF award, and we questioned \$29,389. In addition, the museum provided excessive indirect costs under the award. We recommended that the museum conduct an audit in accordance with federal guidelines, ensure that cash on-hand does not exceed the project's operating needs, and establish records that compare budgeted amounts with actual outlays.

Audit resolution is dependent on the negotiation of a new final indirect cost rate. Those negotiations are proceeding slowly because of a disagreement between NSF and the grantee on the amount of depreciation included in the rate. NSF expects the negotiations and the audit resolution to be completed by January 31, 1995.

Antarctic Program

Period First Reported:
April 1, 1993 - September 30, 1993

NSF awarded a 6.5-year, cost-plus-award-fee contract to Antarctic Support Associates (ASA) to fund research activities and operations as well as to maintain facilities and equipment at sites in Antarctica. ASA claimed approximately \$169 million. We questioned \$652,352 because inadequate, and in some cases no,

documentation was provided to support claimed costs related to equipment, travel, and other services; reimbursement for travel in personal automobiles was not always justified; documentation that justified the use of foreign-flag air carriers was not maintained; and payment made by ASA for services rendered by its two parent companies was not supported by adequate documentation or a contractual agreement to be used to determine reasonableness of the billed costs.

We also noted the following compliance and internal control deficiencies: ASA did not notify NSF before it made changes, totaling \$148,000, to a subcontract; formal policies and procedures related to the use of foreign-flag air carriers and cash drawdowns were not developed; and appropriate approval was not obtained to change the level of liability insurance. NSF is reviewing the contractor's response to NSF's initial offer for resolution. A counterproposal is being prepared for the few remaining issues. Resolution is expected during the next reporting period.

Vanderbilt University

Period First Reported:
April 1, 1993 - September 30, 1993

NSF's Division of Physics awarded Vanderbilt University five grants, totaling \$2,028,300. The University claimed \$1,933,467, and we questioned \$82,507. Questioned costs resulted from personnel activity reports that were incomplete; costs that were incurred before the effective dates of the preaward periods; travel costs that were not supported; and indirect costs that were incorrectly charged against equipment. Our review of internal controls and compliance issues disclosed that cost and price analyses were not always documented, property records were incomplete, and a system to monitor cost sharing was not maintained.

NSF and the University are negotiating a settlement. Resolution is expected during the next reporting period.

Catholic University

Period First Reported:
April 1, 1993 - September 30, 1993

NSF's Division of Physics awarded Catholic University four grants, totaling over \$1.6 million. The University claimed \$1,499,353, and we questioned \$41,244 because salaries were not supported by personnel activity reports; expenditures were not supported by documentation; tuition was charged when graduate students were not working on the awards; and indirect costs were incorrectly charged against equipment and tuition. Our

review of the internal control and compliance issues disclosed that equipment was not tagged, physical inventories were not performed, and a system was not maintained to monitor cost sharing.

NSF is awaiting receipt of documentation to support the questioned salaries and wages. Resolution is expected during the next reporting period.

American University

Period First Reported:
April 1, 1993 - September 30, 1993

NSF's Division of Physics awarded American University four grants, totaling \$2,629,736. The University claimed \$2,037,474, and we questioned \$543,755 because salaries, wages, and tuition costs were not supported by personnel activity reports, and participant support costs were not tracked in the University's accounting system. Our review of internal controls and compliance issues disclosed that there was no written documentation to support price and cost analyses, including competition for purchases of \$10,000 or more, or sole source vendor selection. Resolution of the issues is proceeding slowly because of a change in NSF personnel. Resolution is expected during the next reporting period.

For-Profit Company Claims Ineligible and Unsupported Costs

First Period Reported:
October 1, 1993 - March 31, 1994

NSF granted \$260,000 to a for-profit company to develop electronics equipment under a Phase II SBIR award. The company claimed \$91,427, and we questioned \$41,427 because salaries and wages, travel costs, and subcontract claimed costs were not supported. The company also claimed ineligible indirect costs. NSF is reviewing the grantee's response. Resolution is expected by January 15, 1995.

Nonprofit Educational Corporation Cannot Locate Equipment Charged to Award

First Period Reported:
October 1, 1993 - March 31, 1994

NSF awarded \$562,624 to a nonprofit corporation to support the development of a national science education conferencing network. The corporation claimed \$562,624, and we questioned \$98,308 because the grantee could not locate the equipment claimed as purchased under the grant and did not provide adequate support for other costs claimed.

The grantee has promised to provide NSF the supporting documentation for questioned costs. Resolution is expected by the end of November 1994.

Grantee Claims Costs Incurred After the Grant Expired

First Period Reported:
October 1, 1993 - March 31, 1994

NSF awarded \$226,821 for an SBIR Phase II project. The grantee claimed \$226,821, and we questioned \$56,770 because there were labor costs claimed that were incurred after the grant expired, fringe-benefit costs exceeded actual costs, the grantee claimed costs that were not incurred, and interest was due from NSF advance payments. NSF has received partial documentation from the grantee. Additional information has been requested, and resolution is expected by the end of November 1994.

Northeastern Hospital Has Questioned Costs

First Period Reported:
October 1, 1993 - March 31, 1994

NSF awarded five grants totaling \$563,144 to a northeast hospital to support research projects. The grantee claimed \$369,451 in costs, and we questioned \$5,522. The questioned costs were for duplicate charges for services, unauthorized travel and equipment purchases, and incorrect indirect costs. The grantee also could not show that technical progress reports had been submitted to NSF.

NSF is preparing the audit resolution memorandum. Resolution is expected within the next two weeks.

Small Business Overclaims Indirect Costs

First Period Reported:
October 1, 1993 - March 31, 1994

NSF awarded two grants totaling \$356,117 to a for-profit corporation to assist in the development of computer software models that aid in the performance evaluation of complex systems of manufacturing. The grantee claimed \$356,045, and we questioned \$15,596 because actual indirect cost rates were lower than those claimed and claimed costs were not supported. NSF is reviewing the grantee's response and expects to disallow most of the questioned costs. Final resolution is expected before January 15, 1995.

Acute-Care Teaching Hospital Lacks Cost Sharing Records

First Period Reported:
October 1, 1993 - March 31, 1994

NSF awarded three grants totaling \$167,258 to a teaching hospital for studies in human chromosome structure and insulin-like growth factors. The grantee claimed \$124,146, and we questioned \$1,641 because the hospital made unauthorized purchases. The grantee also did not record its required cost participation on the research projects. NSF is preparing the audit resolution memorandum. Final resolution activity is expected to be completed within the next 2 weeks.

Costs Questioned in Connection With a Science and Math Award

First Period Reported:
October 1, 1993 - March 31, 1994

NSF awarded three grants totaling \$1,123,562 to a nonprofit association to use a national research laboratory's facilities, personnel, and equipment to develop ways of enhancing precollege science and mathematics education. The association claimed \$1,100,979, and we questioned \$61,391 of direct costs claimed under the grants and \$323,944 of indirect costs claimed in the association's indirect cost pools.

We questioned direct costs because the grantee incorrectly charged material and supply costs to the NSF award instead of a Department of Energy award, did not support a consultant's rate of pay with written agreements, and used participant support funds for other types of costs without NSF's prior approval. We questioned indirect costs because the association charged costs to the indirect cost pools that it did not incur or pay.

NSF is reviewing the grantee's latest response to the indirect cost issue raised in the audit report. NSF expects to decide on the resolution action by the end of the next reporting period. NSF expects the grantee to disagree with the final decision.

SBIR Company Overclaims Indirect Costs

First Period Reported:
October 1, 1993 - March 31, 1994

NSF awarded \$250,000 to an SBIR company to develop new coating materials and methods for use for electrical insulation of implantable biosensors. The company claimed \$250,000, and we questioned \$9,826 because claimed indirect costs exceeded allowable amounts.

NSF recently received additional supporting documentation from the grantee. Review and final resolution action is expected within the next month.

Travel Services Provider Fails to Follow Contract Requirements

First Period Reported:
October 1, 1993 - March 31, 1994

NSF awarded a 4-year, \$5.8-million contract to a travel service provider to arrange for international travel for U.S. scientists traveling abroad and foreign scientists traveling to the United States. This program is sponsored by the Division of International Programs.

The contractor claimed \$1,559,147, and we questioned \$48,787 for funds that were expended on unauthorized or unallowable items, excess funds that were not returned by the travelers, travelers' refunded amounts that were not returned to the NSF account, and claimed costs that were not supported by source documentation. The grantee stated that documentation was being provided to NSF. Resolution should be complete by January 31, 1995.

Nonprofit Corporation Claims Unallowable Costs

First Period Reported:
October 1, 1993 - March 31, 1994

NSF awarded \$4,251,500 of an estimated \$10 million cooperative agreement to a private, nonprofit corporation for planning, operating, and managing a project aimed at assisting young people in living and working in a changing scientific and technological society. The corporation claimed \$1,802,685, and we questioned \$45,010 because claimed subcontract costs exceeded actual expenses, claimed costs were not related to the NSF award, refunds and credits

were not deducted from the claimed costs, and cash requests exceeded award disbursement needs. NSF is awaiting the repayment check for the disallowed costs. Once the check is received, closure will be complete.

Small Business Innovation Research Grantee Refuses to Provide Final Project Report

First Period Reported:
October 1, 1993 - March 31, 1994

NSF awarded a \$199,335 grant to a private, for-profit business to develop a suspension core drill that will maximize drilling speeds. The grantee claimed \$193,102, and we questioned \$52,976 because the grantee did not provide adequate documents to support indirect costs. NSF is awaiting the grantee's response to the NSF position on the indirect cost issue raised by the audit report.

Audit of Economic Forecaster Questions Claimed Costs

First Period Reported:
October 1, 1993 - March 31, 1994

NSF awarded a grant to develop various price indexes and cost-of-living comparisons among nations, forecasts of likely industry changes, and other economic advisory services.

The grantee claimed \$195,667, and we questioned \$22,209 of direct costs and \$77,751 of fringe benefits and indirect costs claimed. We questioned these costs because the grantee claimed salaries that exceeded NSF's ceiling, claimed consultant costs were not supported by a written agreement or invoices, and charged the same supplies twice. We questioned the indirect costs because there was excess sick leave in the fringe-benefit cost pool, and excess depreciation was charged in the indirect cost pool. NSF's program office is reviewing the grantee's supporting documentation. The review and resolution should be completed by November 30, 1994.

Review of Grant for the Development of Elementary Curriculum

First Period Reported:
October 1, 1993 - March 31, 1994

NSF awarded a \$2,208,868 grant to a nonprofit organization to support the development of a hands-on, elementary curriculum in science. We questioned \$35,813 because the grantee used NSF funds to reimburse NSF for costs questioned in a prior audit, timesheets did not support claimed costs, costs were charged for expenditures incurred after the award

expired, and claimed costs were not supported by adequate source documentation. NSF is reviewing the grantee's response to the audit. Resolution is expected by February 1995.

Mathematics Council Lacks Salary Support

First Period Reported:
October 1, 1993 - March 31, 1994

NSF awarded four direct grants and funded three pass-through awards totaling \$496,695 to a mathematics council for FY's 1991 and 1992. The funding was in support of establishing standards and disseminating information for the teaching of mathematics. We questioned \$23,984 because the council did not maintain adequate documentation for its support staff's salaries. NSF expects that the grantee will provide documentation supporting costs that offset the questioned amounts. Resolution is expected by November 30, 1994.

Museum Lacks Support of Travel Costs

First Period Reported:
October 1, 1993 - March 31, 1994

Claimed museum expenditures of \$896,111 were audited and resulted in \$15,310 questioned costs. The expenditures were to support museum projects in Pacific region plants and sea life, with the questioned costs resulting from a lack of documentation for travel expenditures. Interest earned on fund advances from NSF were not remitted to NSF, and the museum did not have an NSF-approved indirect cost rate. NSF is awaiting documentation from the grantee. Resolution is expected by November 30, 1994.

Washington State Museum Improperly Charges Costs

First Period Reported:
October 1, 1993 - March 31, 1994

NSF provided four awards to support scientific exhibits and a science carnival. The museum claimed \$522,357, and we questioned \$22,950 because claimed costs exceeded actual expenditures, salary costs were based on rates or time and effort reports that were not properly approved, and there were improperly charged supplies, computer hardware, and advertising costs. The museum has provided information to NSF with the resolution expected to be complete within the next 45 days.

Nonprofit Organization Lacks Policies and Procedures for Accounting for General Funds

First Period Reported:
October 1, 1993 - March 31, 1994

A nonprofit organization designed to sponsor research in earthquake engineering claimed \$75,600 of NSF funding during the 22-month period ended December 31, 1991. Although we did not question specific expenditures, we found that the organization did not separately account for federal funds, there was no formal policy on how to monitor the allowability of federal expenditures, and there was no formal policy on how to ensure that subrecipients of federal funding complied with federal laws and regulations.

NSF has contacted the grantee, who is preparing a response. Because this organization is a consortium of university representatives, it has been difficult to contact the individual responsible for preparing the response. Closure is expected during the first quarter of FY 1995.

Museum Fails to Submit Final Report

First Period Reported:
October 1, 1993 - March 31, 1994

An A-133 audit approved by the National Endowment for Humanities covered \$149,439 of costs claimed under NSF awards during FY's 1991 and 1992. Although we did not question costs, there were procedural processes that needed to be instituted or strengthened.

The auditors found that federal funds requested exceeded cash requirements, the financial reports submitted to NSF did not agree with the museum's general ledger, salaries were not adequately documented, the museum did not maintain adequate cost sharing records, and final technical reports were not submitted to NSF.

The grantee is preparing a response. NSF expects to be able to resolve the audit within the next 2 months.

Agency Refusal To Provide Information Or Assistance

During this reporting period, there were no reports made to the National Science Board of instances where information or assistance, requested under section 5(a)(5) of the Inspector General Act of 1978, as amended, was unreasonably refused or not provided.

Significant Management Decisions That Were Revised

No significant management decisions were revised during the reporting period.

Inspector General's Disagreement With Significant Management Decisions

The Inspector General has no disagreement with significant management decisions made during this reporting period.

LIST OF REPORTS

We issued the following audit reports and, where applicable, the total dollar value of questioned costs (including a separate category for the dollar value of unsupported costs) is listed for each report.

NSF and CPA Performed Audits

<i>Number</i>	<i>Grantee</i>	<i>Date Report Issued</i>	<i>Questioned Costs</i>	<i>Unsupported Costs</i>
94-1025	William Spangle and Associates, Inc.	06/17/94	14,573	0
94-1026	Heusser & Heusser	06/17/94	57,818	57,564
94-1027	Astronomical Society of the Pacific	06/17/94	6,482	0
94-1028	Solar Physics Research Corporation	06/17/94	0	0
94-1029	Eli Whitney Museum	06/17/94	4,392	4,296
94-1030	Buckeye Bluegrass Farms	06/17/94	12,666	4,102
94-1031	Adelphi Technologies, Inc.	06/17/94	2,763	0
94-1032	Chromex, Inc.	06/17/94	707	0
94-1033	27th International Geographical Congress	06/17/94	66,854	66,854
94-1034	Consumers Union of United States, Inc.	06/17/94	0	0
94-1035	Reynolds & Schaeffer, Inc.	06/17/94	0	0
94-1036	Data Parallel Systems, Inc.	06/17/94	157,137	156,959

<i>Number</i>	<i>Grantee</i>	<i>Date Report Issued</i>	<i>Questioned Costs</i>	<i>Unsupported Costs</i>
94-1037	The Emeritus Foundation	08/08/94	72,783	41,917
94-1038	Aurora Flight Sciences Corporation	08/08/94	207,482	2,332
94-1039	American Association of Variable Star Observers	08/15/94	1,868	59
94-1040	Triangle Research and Development Corporation	08/15/94	14,727	0
94-1041	Boston Partners in Education, Inc.	09/08/94	1,232	89
94-1042	National Association for Industry- Education Cooperation	09/08/94	3,039	2,895
94-1043	Minnesota Zoological Garden	09/08/94	55,699	35,510
94-1044	Foundation for Glacier and Environmental Research	09/08/94	133,353	131,961
94-1045	Desert Botanical Garden	09/08/94	69,243	49,928
94-1046	Apeldyn Corporation	09/08/94	19,820	5,312
94-1047	Oregon Advanced Computing Institute	09/09/94	2,887	0
94-1048	Institute for Productivity Research	09/09/94	23,551	18,802
94-1049	Merck & Co., Inc.	09/12/94	0	0
94-1050	Southern Connecticut State University Research Foundation	09/13/94	151,969	144,579
94-1051	Energy Conversion Devices, Inc.	09/26/94	3,299	3,078
94-1052	North American Geotechnical Company	09/26/94	34,646	19,375
94-1053	Interphases Research Company	09/28/94	4,861	4,861
94-1054	Computer Motion, Inc.	09/28/94	0	0
94-1055	Dames & Moore	09/28/94	11,267	11,267
94-1056	Neushul Mariculture, Inc.	09/28/94	907	0

<i>Number</i>	<i>Grantee</i>	<i>Date Report Issued</i>	<i>Questioned Costs</i>	<i>Unsupported Costs</i>
94-1057	The Education Group, Inc.	09/28/94	5,956	3,725
94-1058	University of Minnesota	09/30/94	117,246	0
94-1059	Michigan State University	09/30/94	62,814	29,706
94-1060	Lehigh University	09/30/94	201,181	67,121
94-1061	University of California, Berkeley	09/30/94	67,923	0
94-1062	University of Oklahoma	09/30/94	5,098	3,504
94-1063	University of Rochester	09/30/94	854,580	0
94-1064	Northern Illinois University	09/30/94	73,569	0
94-1065	University Corporation for Atmospheric Research	09/30/94	0	0
94-1066	Society for the Advancement of Chicanos and Native Americans in Science	09/30/94	0	0
94-1067	Better Education, Inc.	09/30/94	17,563	0
94-1068	Sociometrics Corporation	09/30/94	19,595	0
94-1069	Consultec Scientific, Inc.	09/30/94	382	0
94-1070	Chemludens	09/30/94	72,952	0
94-1071	Breakerwheel, Inc. (MRAM, Inc.)	09/30/94	14,303	84
94-1072	Decision Development Corporation	09/30/94	209,585	174,075
94-1073	Linknet	09/30/94	0	0
94-1074	Laser Institute of America	09/30/94	3,809	811
94-1075	Film Arts Foundation	09/30/94	75,091	51,770
94-1076	Cold Spring Harbor Laboratory	09/30/94	24,291	151
94-1077	Electric Power Research Institute, Inc.	09/30/94	13,375	2,172

<i>Number</i>	<i>Grantee</i>	<i>Date Report Issued</i>	<i>Questioned Costs</i>	<i>Unsupported Costs</i>
94-1078	WYCO Corporation	09/30/94	23,581	14,880
94-1079	McCormick & Associates, Inc.	09/30/94	0	0
94-1080	Lancit Media Production	09/30/94	734	734
94-1081	Institute for Decision Systems Research	09/30/94	29,562	0
94-1082	The Aspen Institute	09/30/94	37,285	30,857
94-1083	Talcott Mountain Science Center	09/30/94	258,354	258,354
94-1084	Fort Worth Museum of Science and History	09/30/94	368,918	368,918
94-1085	CSY, Inc.	09/30/94	161,836	27,294
94-1086	Byrd & Block Communications, Inc.	09/30/94	165,451	153,121
94-1087	Cambridge Studios, Inc.	09/30/94	14,284	599

INTERNAL AUDITS

<i>Number</i>	<i>Title</i>	<i>Date Report Issued</i>	<i>Questioned Costs</i>	<i>Unsupported Costs</i>
94-2109	Review of NSF's Management of Application Software Maintenance	09/26/94	0	0
94-2110	Review of Proposal Processing Times	09/27/94	0	0
94-2111	Review of Printing NSF Publications	09/30/94	0	0
94-2112	SBIR Preaward Review	09/30/94	0	0

NSF COGNIZANT AUDITS

<i>Number</i>	<i>Grantee</i>	<i>Date Report Issued</i>	<i>Questioned Costs</i>	<i>Unsupported Costs</i>
94-4052	Galaxy Institute for Education	06/30/94	1,074	0
94-4053	The American Society for Cell Biology	06/30/94	0	0
94-4054	Girls Incorporated	06/30/94	194	0
94-4055	American Association for the Advancement of Science ('93)	06/30/94	0	0
94-4056	American Association for the Advancement of Science ('92)	06/30/94	0	0
94-4057	Field Museum of Natural History	06/30/94	0	0
94-4058	Center for Advanced Study in the Behavioral Sciences	06/30/94	0	0
94-4059	Scientific Committee on Ocean Research ('93)	06/30/94	0	0
94-4060	Scientific Committee on Ocean Research ('94)	06/30/94	0	0
94-4061	American Meteorological Society	06/30/94	0	0
94-4062	American Association of Physics Teachers	06/30/94	0	0
94-4063	Five Colleges, Inc.	06/30/94	0	0
94-4064	Museum of Science-Boston	06/30/94	279,205	279,205
94-4065	Ohio's Center of Science and Industry	06/30/94	0	0
94-4066	Conference Board on the Mathematical Sciences	06/30/94	0	0
94-4067	Human Relations Area Files	06/30/94	0	0
94-4068	New York Botanical Garden	06/30/94	0	0
94-4069	American Mathematical Society	06/30/94	648	648

<i>Number</i>	<i>Grantee</i>	<i>Date Report Issued</i>	<i>Questioned Costs</i>	<i>Unsupported Costs</i>
94-4070	Conference Board of the Mathematical Sciences	09/08/94	0	0
94-4071	American Educational Research Association	09/08/94	0	0
94-4072	Connecticut Business and Industry Association	09/14/94	0	0
94-4073	The Norman Howard School	09/14/94	0	0
94-4074	The Exploratorium	09/14/94	0	0
94-4075	San Diego Space and Science Foundation	09/26/94	0	0
94-4076	The Carnegie Institute	09/26/94	0	0
94-4077	Ecological Society of America	09/26/94	0	0
94-4078	New York Hall of Science	09/26/94	33,109	33,109
94-4079	Kent State University Foundation	09/26/94	0	0
94-4080	Point Reyes Bird Observatory	09/26/94	0	0
94-4081	Montana Council of Teachers of Mathematics	09/28/94	22,915	0

OTHER FEDERAL AUDITS

<i>Number</i>	<i>Grantee</i>	<i>Date Report Issued</i>	<i>Questioned Costs</i>	<i>Unsupported Costs</i>
94-5361	Bethune Cookman College	06/17/94	0	0
94-5362	Texas Luthern College	06/17/94	0	0
94-5363	Rockefeller University	06/17/94	0	0
94-5364	Southern Union Junior College	06/17/94	0	0
94-5365	Lafayette College	06/17/94	0	0
94-5366	George Washington University	06/17/94	99	0
94-5367	Alabama Aviation & Technical College	06/17/94	0	0
94-5368	David Lipscomb University	06/17/94	0	0
94-5369	Converse College	06/17/94	0	0
94-5370	St. Mary's College of California	06/17/94	0	0
94-5371	University of Kansas Center for Research, Inc.	06/17/94	0	0
94-5372	Madonna University	06/17/94	0	0
94-5373	University of Richmond	06/28/94	0	0
94-5374	State of Oregon	06/28/94	0	0
94-5375	Joslin Diabetes Center, Inc.	06/28/94	0	0
94-5376	State of Kansas	06/28/94	0	0
94-5377	Middleburg College	06/28/94	0	0
94-5378	University of Denver	06/28/94	0	0
94-5379	Drake University	06/28/94	0	0
94-5380	Iona College	06/28/94	0	0
94-5381	University of Akron	06/28/94	0	0

<i>Number</i>	<i>Grantee</i>	<i>Date Report Issued</i>	<i>Questioned Costs</i>	<i>Unsupported Costs</i>
94-5382	State of Delaware	06/28/94	0	0
94-5383	Massachusetts Institute of Technology	06/28/94	0	0
94-5384	Rensselaer Polytechnic Institute	06/28/94	0	0
94-5385	Ohio State University Research Foundation	06/28/94	75	75
94-5386	Pennsylvania State University	06/28/94	0	0
94-5387	Nebraska Wesleyan University	06/28/94	0	0
94-5388	Hiram College	06/28/94	0	0
94-5389	Duquesne University	06/28/94	0	0
94-5390	State of North Dakota	06/28/94	0	0
94-5391	State of Colorado	06/28/94	0	0
94-5392	State of Nebraska	06/28/94	0	0
94-5393	Colgate University	06/28/94	0	0
94-5394	National Academy of Sciences	06/28/94	0	0
94-5395	Montgomery County Community College	06/28/94	0	0
94-5396	GMI Engineering & Management Institute	06/28/94	69,786	69,786
94-5397	University of San Francisco	06/28/94	0	0
94-5398	Research Foundation of the City University of New York	06/28/94	0	0
94-5399	Brown University	06/28/94	0	0
94-5400	Rutgers University	06/28/94	0	0
94-5401	State of Iowa	06/28/94	0	0
94-5402	Dartmouth College	06/28/94	0	0
94-5403	University of Michigan	06/28/94	124,181	124,181
94-5404	University of Pittsburgh	06/30/94	0	0
94-5405	State of Washington	06/30/94	0	0
94-5406	John Carroll University	06/30/94	0	0
94-5407	Sonoma State University Academy Foundation, Inc.	06/30/94	0	0
94-5408	University of Toledo	06/30/94	0	0
94-5409	Ball State University	06/30/94	0	0

<i>Number</i>	<i>Grantee</i>	<i>Date Report Issued</i>	<i>Questioned Costs</i>	<i>Unsupported Costs</i>
94-5410	University of South Alabama	06/30/94	0	0
94-5411	University of California-System Office	06/30/94	0	0
94-5412	National Governors' Association for Policy Research	06/30/94	0	0
94-5413	Western Kentucky University	06/30/94	0	0
94-5414	New England Aquarium Corporation	06/30/94	0	0
94-5415	CERF	06/30/94	83	0
94-5416	State of South Carolina	06/30/94	0	0
94-5417	Fisk University	06/30/94	0	0
94-5418	The Foundation for the California State University, San Bernardino	06/30/94	0	0
94-5419	State of South Carolina	06/30/94	0	0
94-5420	Boston University	06/30/94	0	0
94-5421	Triangle Coalition Technology	06/30/94	0	0
94-5422	Emory University	06/30/94	0	0
94-5423	Mathematics and Science Education	06/30/94	0	0

OVERSIGHT

<i>Number</i>	<i>Title</i>	<i>Date Report Issued</i>	<i>Questioned Costs</i>	<i>Unsupported Costs</i>
94-3209	Conflicts-of-Interests Reviews: NSF Staff and Rotators Entering and Leaving, March 1994	04/15/94	0	0
94-3210	Conflicts-of-Interests Reviews: Volunteers Entering and Leaving, March 1994	04/07/94	0	0
94-3211	Conflicts-of-Interests Reviews: Intergovernmental Personnel Act Assignees Entering and Leaving, March 1994	04/26/94	0	0
94-3212	Conflicts-of-Interests Reviews: NSF Staff and Rotators Entering and Leaving, April 1994	05/19/94	0	0
94-3213	Conflicts-of-Interests Reviews: Volunteers Entering and Leaving, April 1994	06/07/94	0	0
94-3214	Conflicts-of-Interests Reviews: Intergovernmental Personnel Act Assignees Entering and Leaving, April 1994	05/19/94	0	0
94-3215	Conflicts-of-Interests Reviews: NSF Staff and Rotators Entering and Leaving, May 1994	06/24/94	0	0
94-3216	Conflicts-of-Interests Reviews: Intergovernmental Personnel Act Assignees Entering and Leaving, May 1994	06/24/94	0	0
94-3217	Conflicts-of-Interests Reviews: Volunteers Entering and Leaving, May 1994	06/20/94	0	0

*Statistical Information
Required by the
Inspector General
Act of 1978,
as Amended*

Table I. Audit Reports Issued With Questioned Costs

		<i>Number</i>	<i>Questioned Costs</i>	<i>Unsupported Costs</i>
A.	For which no management decision has been made by the commencement of the reporting period.	43	3,272,287	1,552,669
B.	Which were issued during the reporting period.	66	4,566,712	2,456,620
C.	Adjustments to questioned costs resulting from resolution activities.	0	188	0
Subtotals of (A+B+C)		109	7,839,187	4,009,289
D.	For which a management decision was made during the reporting period.	27	1,119,284	324,125
	(i) dollar value of disallowed costs	0	319,675	N/A
	(ii) dollar value of costs not disallowed	0	799,609	N/A
E.	For which no management decision has been made by the end of the reporting period.	82	6,719,903	3,685,164
Reports for which no management decision was made within 6 months of issuance.		22	2,317,244	1,369,331

Funds to be Put to Better Use: *Funds the OIG has identified in an audit recommendation that could be used more efficiently by reducing outlays, deobligating program or operational funds, avoiding unnecessary expenditures, or taking other efficiency measures.*

**Inspector
General
Reports**

Table II. Audit Reports Issued With Recommendations For Better Use of Funds

		<i>Number</i>	<i>Dollar Value</i>
A.	For which no management decision had been made by the commencement of the reporting period.	0	0
B.	Which were issued during the reporting period.	1	800,000
Subtotals of A & B		1	800,000
C.	For which a management decision was made during the reporting period.	0	0
	(i) dollar value of recommendations that were agreed to by management	0	0
	based on proposed management action	0	0
	based on proposed legislative action	0	0
	(ii) dollar value of recommendations that were not agreed to by management	0	0
D.	For which no management decision has been made by the end of the reporting period.	1	800,000
Report for which no management decision was made within 6 months of issuance.		0	0

As required by the Inspector General Act of 1978, we provide tables in each Semiannual Report to Congress that give statistical information on work conducted by our audit and investigation units.

ADDITIONAL PERFORMANCE MEASURE

Tables that provide statistics concerning these required performance measures are on pages 24, 63, and 64. Vice President Gore's National Performance Review, GAO, and OMB have suggested that Offices of Inspector General develop additional performance measures that provide information about their activities. As a result, we developed an additional performance measure to better explain the work of our office.

OIG staff members regularly conduct reviews of internal NSF operations. These reviews often result in systemic recommendations that are designed to improve the economy and efficiency of NSF operations.

We routinely track these systemic recommendations and report to NSF's Director and Deputy Director quarterly about the status of our recommendations. The following table provides statistical information about the status of all systemic recommendations that involve internal operations of the Foundation. The statistics demonstrate that NSF management has, in general, agreed to resolve our systemic recommendations in a reasonable manner.

Status of Systemic Recommendations That Involve Internal NSF Management

Open Recommendations

Recommendations Open at the Beginning of the Reporting Period	36
New Recommendations Made During Reporting Period	39
Total Recommendations to be Addressed	75

Management Resolution of Recommendations¹

Recommendations Awaiting Management Resolution	7
Recommendations Resolved by Management	68
Management Agrees to Take Reasonable Action	68
Management Decides No Action is Required	0

Final Action on OIG Recommendations²

Final Action Completed	21
Recommendations Open at End of Period	54

¹ "Management Resolution" occurs when management completes its evaluation of an OIG recommendation and issues its official response identifying the specific action that will be implemented in response to the recommendation.

² "Final Action" occurs when management has completed all actions it has decided are appropriate to address an OIG recommendation.

Aging of Open Recommendations

Awaiting Management Resolution:

0 through 6 Months	5
7 through 12 Months	1
more than 12 Months	1

Awaiting Final Action After Resolution:

0 through 6 Months	25
7 through 12 Months	3
13 through 18 Months	5
19 through 24 Months	10
more than 24 Months	4

Recommendations Where Management Decides No Action is Required

None to report during this period.

Recommendations Awaiting Management Resolution for More Than 12 Months

By memorandum on June 25, 1993, we recommended that the Director decide what actions, if any, should be taken with regard to individuals who have been found to have committed misconduct in science by the Department of Health and Human Services but have not been debarred. The Director has obtained advice from the Office of General Counsel and is discussing the issue with senior staff. The delay in resolving this issue leaves unresolved a significant issue in the management of the Agency's misconduct cases.

Recommendations Awaiting Final Action for More Than 24 Months

1. In Report No., OAO-15-04-88, *Review of the NSF Computer Security Program*, April 15, 1988, we recommended that a risk analysis for computer operations be performed and a contingency plan consistent with published guidelines be developed. The proposal for preparing a contingency plan is expected in November 1994, and preparation of the plan is anticipated to begin in December 1994. Although the delays in implementation were extensive, no losses have resulted. We consider the current action to be reasonable.
2. In Report No., OAO-19-06-88, *Review of Passwords for the Electronic Timecard System*, June 15, 1988, we recommended that encrypted passwords be developed for the electronic timecard system. Management deferred implementation of this recommendation because a new payroll/personnel system that would include this feature was already being planned. However, the new system was delayed due to the budget constraints and other priority projects. Development is currently underway and completion is planned for the first quarter of 1995. We consider management's current action to be reasonable.
3. In Report No., OIG-02-89, *Followup Review of NSF Time and Attendance Reporting System*, March 6, 1989, we recommended that daily employee flextime records be automated and interfaced with the timecard system. The records were automated, but the system interface was postponed and scheduled as part of a new payroll/personnel system. In Semiannual Report Number 10, page 14, we expressed concern over the delay in implementing this interface. We estimated that NSF would save at least \$900,000 and put these funds to better use once the planned interface system was implemented. The timecard portion of the system is now being tested, user training sessions are underway, and management has given the 1st quarter of FY 1995 as the implementation date. We consider management's current action to be reasonable.
4. By memorandum on July 1, 1992, we recommended that NSF have an amendment enacted to bring the NSF under the jurisdiction of Program Fraud Civil Remedies Act. NSF prepared an amendment to the Act and submitted it to Congress on May 11, 1993. Congress did not act on the proposed amendment. The House and Senate staffs have indicated support for the amendment and a willingness to consider including it in suitable legislation when the opportunity arises. NSF management will again include this amendment in the Foundation's legislative program for FY 1996. We consider management's action to be reasonable.

Prepared by:

***Office of Inspector General
National Science Foundation***

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